Trois essais sur la croissance, la pauvreté et les propriétés cycliques de la politique budgétaire

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Année 2006

THESE NOUVEAU REGIME
Présentée et soutenue publiquement
Pour l'obtention du titre de Docteur ès Sciences Economiques

par

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Septembre 2006

Titre :

TROIS ESSAIS SUR LA CROISSANCE, LA PAUVRETE ET LES PROPRIETES CYCLIQUES DE LA POLITIQUE BUDGETAIRE

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A Mariam, Mamadou, Adama, Oumar Jr. et à toute la génération montante de ma famille.

Le CERDI n'entend donner aucune approbation ou improbation aux opinions émises dans cette thèse. Ces opinions doivent être considérées comme propes à leur auteur.

REMERCIEMENTS

Mener une thèse à son terme est généralement perçu comme le fruit d'un travail et d'effort personnels mais le soutien de nombreuses personnes y est déterminant, et je tiens à remercier ici ces personnes.

Mes remerciements s'adressent, en tout premier lieu, à Monsieurs les Professeurs Jean-Louis Arcand et Jean-Louis Combes qui ont accepté de me guider tout au long de cette aventure. Leur disponibilité, leurs encouragements, leurs vastes connaissances théoriques et parfaite maîtrise d'outils quantitatifs, et la pertinence de leurs points de vue me furent d'une grande utilité.

Je suis également infiniment reconnaissant à Monsieur le Professeur Patrick Guillaumont pour son soutien constant et l'intérêt qu'il a toujours manifesté pour mes travaux de recherche. Je lui rends ici un vibrant hommage pour avoir su créer au CERDI un environnement propice à l'éclosion de talents.

Je remercie sincèrement Monsieurs les Professeurs Olivier Cadot et Christian Morrisson qui, en dépit de leur emploi du temps très serré, m'ont fait l'honneur d'être rapporteurs dans mon jury. Je suis aussi redevable à l'ensemble des personnes qui ont suivi ma présentation au séminaire des doctorants, notamment Madame le Professeur Sylviane Guillaumont-Jeanneney et Monsieur Jules-Armand Tapsoba, pour la pertinence de leurs commentaires et leurs suggestions constructives.

La préparation de la thèse a nécessité de fréquents déplacements sur Clermont-Ferrand et de nombreuses démarches consulaires. Ceci n'aurait été possible sans la promptitude et la disponibilité de Monsieur Patrick Doger, à qui je dis merci. Je ne peux évidemment oublier Martine Bouchut, Marie-Michèle Ceysson, Solange Debas et Jacqueline Reynard pour leur disponibilité et leur professionnalisme.

Ce projet aurait été hardi voir impossible n'eut été l'existence d'un environnement social agréable. J'ai une pensée particulière à toute ma famille, au vrai sens africain du terme, et singulièrement à mon père et à ma mère pour leur soutien et leurs encouragements. Je leur suis infiniment reconnaissant de m'avoir inculqué le sens de l'humilité, l'esprit de dépassement, une foi inébranlable, et une ténacité inaccessible au découragement : caractères qui m'ont permis de mener ma thèse de doctorat à son terme.

Mes remerciements vont également à mes frères Papa, Oumar Djoboula, Macky, Sid et Amadou NJ, mon oncle Ousmane, mon(a) neveu(ièce) Doura/Sandrine et leurs familles respectives pour avoir su créer un cadre familial agréable. Je voudrais également renouveler mon admiration à mon épouse, Aissatou L., pour son soutien et sa compréhension durant cette épreuve que fut la préparation de la thèse.

Dans les instants d'incertitude, le soutien, les encouragements et l'amitié de collègues et de mentors ont été déterminants. Je voudrais témoigner ici ma reconnaissance à Abdoulaye et Sata Seck, Emmanuel Goued-Njayick, Ruth Engo, Diaretou Gaye, Brian Ngo, Emmanuel Akpa, Carl Gray, Edouard Nsimba, Pingfan Hong et Ana Cortez.

Le contenu de cette thèse a bénéficié des commentaires et suggestions d'amis et certains membres de l'équipe du CERDI. Je voudrais exprimer ma gratitude à Sid, Boubou, Roland, Djoulassi Oloufade, Jean-François Brun, Fanon, Leonard et Janvier pour les discussions constructives, à Bachir et Harry pour l'aide qu'ils m'ont apportée dans la construction d'une de mes bases de données.

J'ai bénéficié également du soutien moral de personnes avec lesquelles j'ai noué de solides amitiés à la faveur de mon passage au CERDI. Je rends ici hommage à Boubou, Ahmed, Gaëlle, Armand Gala et Marie-Cécile. Enfin, mes sincères remerciements vont à Yaya Seydou, Djoulassi Oloufade et Mamadou Dian pour leur totale disponibilité et la précieuse aide qu'ils m'ont apportées et qui m'ont permis de déposer la thèse dans un délai raisonnable.

TABLE OF CONTENTS

TABLES AND FIGURES

CHAPTER I: PUBLIC SPENDING AND REAL EXCHANGE RATE INSTABILITIES AND GROWTH IN AFRICA: EVIDENCE FROM PANEL DATA

CHAPTER II: POVERTY AND REAL EXCHANGE RATE: EVIDENCE FROM PANEL DATA

CHAPTER III: IS FISCAL POLICY BECOMING COUNTERCYCLICAL IN AFRICA ?

GENERAL INTRODUCTION

GENERAL INTRODUCTION

Africa[1]'s GDP growth varies considerably across time but appears to be generally poor. The region's growth performance is disappointing in absolute terms, and is even gloomier when set against that of other developing regions. Economic growth was so weak in the continent that Africa's per capita GDP was lower in 1997 than 30 years before. The decline was even stronger in some countries, where per-capita output fell by more than 50 percent (World Bank, 2000). As a result of this poor growth, the average income[2] in Africa in 1997 stands at just a third of that of South Asia[3], making the region the poorest in the world (World Bank, 2000). Similarly, the big income divide between African countries and developed countries continues to widen as the latter group of countries has grown steadily, albeit at a moderate pace, over the past three decades (United Nations, 2006). Africa's poor performance is perhaps an important part of Bourguignon and Morrisson (2002)'s finding that attributes growing disparities in welfare between the world's citizens more to differences in inequality between countries than inequality within countries.

In addition to this dismal economic performance, the continent lags behind in terms of human development. Africa's social indicators do not compare favourably with those of other regions despite some improvements recorded in the continent. For instance, life expectancy in Africa stood at only 52 years in 1997 compared to an average of 65

[1] Africa means Sub-Saharan Africa in the rest of the dissertation.
[2] The figure used is the per capita GNI measured through the Atlas Method.
[3] Many African countries were wealthier than their South Asian counterparts in the 1960s.

years in the developing world and 77 years in the Organisation for Economic Co-operation and Development (OECD) countries. This reflects, in part, high infant and maternity mortalities in Africa as well as the toll taken on lives in the region by the HIV/AIDS epidemic. Ninety African out a thousand die before reaching 5 years compared to 77 in South Asia and 6 per 1 000 in the OECD countries. High maternal mortality is also pervasive in the continent: of the 12 countries in the world with rates above 1 000 deaths per 100 000 live births in 1997, 10 were located in Africa. Similar patterns emerge also in the area of education. Africa saw its gross primary enrolment rates stagnate at 74 percent from 1982 to 1997 while South Asia managed to increase its rates from 77 percent to more than 100 percent throughout the same period (World Bank, 2001). As far as the HIV/AIDS prevalence is concerned, Sub-Saharan Africa is home to over 70 percent of the total world HIV-positive population. And, such countries as Botswana, Zimbabwe, and Zambia have HIV seroprevalence rates above 20 percent while South Africa has the fastest growing epidemic of HIV in the world, with 10% of its population, or 4 million people, are infected, placing it first in the world in number of infected individuals (United Nations, 2000).

The above trends clearly show that African countries are increasingly diverging compared to other developing countries with respect to economic and social development. The United Nations (2006) finds growing income inequality among countries, in general, to be worrisome for three reasons. First, countries that have better "endowments" are more likely to enjoy preferential access to capital markets, which make them more immune against commodity market disturbances. The underlying reason

for such phenomena is to be found in the "inequitable" world markets. For instance, investment tends to be concentrated in countries with favorable endowments in terms of wealth and institutions. Second, economic might and political clout tend to move hand-in-hand. In other terms, the rules governing global markets may not always reflect the interests of the poorest nations mainly because these countries tend to have difficulties making their voice heard during the negotiation processes preceding the adoption of those rules. Third, growing global divergences can impair economic growth and hamper the ability of poorer countries to fully take advantage of opportunities unleashed by globalization. Lackluster growth limits poverty reduction efforts. And, in some instances, this has proved to be a leading factor to civil conflicts, regional tensions, and social instability (Collier, 2006: Murshed, 2006)

Generating high and sustained economic growth and more generally fostering economic and social development in Africa is arguably the most important challenge in global development. Accordingly, Africa has been at the centre of major development-related initiatives launched by the international community in recent years. The United Nations Millennium Development Goals (MDGs), drawn from the Millennium Declaration, set quantitative targets for eradicating poverty and related human deprivations worldwide and places a particular emphasis on Africa. Similarly, the Monterrey Consensus, which highlights the mutual responsibility of developed countries and developing countries in achieving the MDGs, also gives due consideration to the special needs of the region. The philosophy of mutual commitment and accountability is an essential element of the content and process of the New Partnership for Africa's

Development (NEPAD). NEPAD is an African-inspired plan for the development of the continent. It was designed to tackle current challenges facing Africa, including issues such as peace, security, good governance, political and corporate governance, thus creating an enabling environment for private investment, both domestic and foreign, and economic and social development. NEPAD was formally approved by the Organisation of African Unity (OAU) and subsequently endorsed by the Group of Eight[4] (G8) and the United Nations General Assembly, as the main strategic framework to address the challenges facing Africa. At the heart of this plan is the concept of partnerships, which emphasises mutual commitments and obligations by African countries and the international community. On the one hand, African governments are expected to adopt measures aimed at ensuring greater accountability to their citizens and efficient and effective use of their resources. On the other hand, the international community must do their part to ensure increased and effective aid, more debt relief, and fairer trade rules.

Calling for mutual commitment and accountability of developed and developing nations in addressing poverty and other development challenges is an implicit recognition of the role played by both endogenous and exogenous factors in shaping the development paths of many developing countries, especially those in Africa. This view reflects also some of the findings of the growth literature on Africa. In fact, many explanations have been offered to account for Africa's dismal growth performance. They can be summarised into three main interrelated arguments.

4 The Group of Eight (G8) consists of Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, and the United States.

The first places a great importance on deep-rooted structural constraints in explaining Africa's poor performance. Those constraints are typically associated with climate and geography, and beyond the control of African policymakers. Sachs and Warner (1997), for instance, link the disappointing growth performance of the region to its tropical location, its position in global markets, and its resources.

The second emphasises institutional factors. Some, such as Easterly and Levine (1997), attribute Africa's slow growth to ethnic fragmentation. Others, such as Acemoglu et al. (2001), point to the lack of institutions that enforce the rule of law and promote investment as the main explanation of poor growth performance of African economies. They suggest that these institutions were shaped by colonisation strategies, which in turn were guided by the feasibility of settlement or in other words by geography. There are few settlements in countries that have inauspicious climate and high mortality rates. Accordingly, institutions that were developed in these countries tend to promote extractive states, with little enforcement of property rights and few checks and balances. More importantly, these institutions endured after independence, and African countries are some cases in point.

The third argument lies on policy mistakes. Africa's economic crisis is explained by poor public policies, including the lack of openness and macroeconomic instability (high inflation, unsustainable fiscal and current deficits, and real exchange rate misalignments). This view has dominated the economic thinking and served as the basis for policy prescription for the continent since the 1980s. Most of the policies that have

been prescribed and implemented are grounded in the dependent economy model or "Australian model", in which clearing internal and external imbalances requires an increase of the relative price of tradable to nontradable goods, defined as the depreciation of real exchange rate, and a reduction in domestic absorption. One persuasive strand of this literature explores the effects of policy instabilities on economic growth. For instance, Guillaumont et al. (1999) uncover a negative relationship between economic growth and investment and real exchange rate instabilities and presents evidence that these policy-related instabilities are ignited by exogenous shocks or "primary instabilities" such as terms of trade instability, political disturbances, and climate shock. Chapter I will build on the aforementioned work. But, it differs from it in two respects. Firstly, it concentrates in real exchange rate and public spending, the two key variables in the dependent economy model. Secondly, the analysis and conclusions in this chapter are based on dynamic panel data rather than the commonly use of cross-country data. While acknowledging the critical role played by institutional and structural factors in Africa's poor performance, Chapter I will explore how instabilities in public spending and real exchange rate have constrained economic growth in Africa. Chapter I will then investigate the transmission channels through which these relationships operate.

The impact of policies, largely inspired by the dependent economy model, on poverty has been the subject of a lot of controversy. Some, such as Ali (1998), find successful macroeconomic reforms implemented in African countries to have increased poverty. Others, such Demery and Squire (1996), disagree and show that improved macroeconomic environment moves, to a large extent, hand-in-hand with poverty

reduction. Chapter II will explore the relationship between economic policies and poverty by using again the dependent economy model as the main theoretical framework. Accordingly, it will focus on two variables: the real exchange rate and the absorption, more on the first than the second, and explores the links between these two variables and poverty. In line with the vast empirical literature on poverty reduction, Chapter II will highlight economic growth as the major indirect channel through which economic policies, captured through real exchange and absorption, influence poverty. However, it will underscore direct channels that are at work as well. In fact, the reduction of the absorption generally achieved by tightening public spending can be detrimental to the poor if the cuts in government expenditures target social programmes and other transfers and subsidies to the poor. Moreover, by assuming that the tradable sector is labour intensive and that the main asset at the disposal of the poor is their workforce, any depreciation of real exchange rate may result in the increase of returns to labour and thus improve the poor's well-being. But, this relationship critically depends on a third set of factors, which include the income distribution and the quality of institutions. The level of income inequality may determine the extent to which the poor benefit from the depreciation of the real exchange rate. Higher price of tradable relative to nontradable goods increases the profitability of the tradable sector. The poor may reap this opportunity only if they have full access to production factors, including capital. In the presence of credit market imperfections as it is the case in most developing countries, access to production factors is based upon the ownership of collateral, which the poor lack if the distribution of income is skewed. Equally important is the quality of institutions. Efficient institutions could not only facilitate the transmission of price

signals to the poor but also help them respond to these signals. In sum, the additional argument put forward is that real exchange rate depreciation favours the poor, provided that income is fairly distributed and institutions are sound.

One common structural weakness of many African economies is their great vulnerability to terms-of-trade shocks, which heavily influence economic cycles and the cyclical properties of economic policies. During boom periods, many countries implemented very expansionary fiscal and monetary policies that led to real exchange appreciation and increasing fiscal and external imbalances. At the other hand of the spectrum, bust times forced many of these countries to adopt tight monetary policies and indiscriminate fiscal adjustments. Such policies, which are obviously procyclical, might result in important losses in many valuable social and infrastructural projects, impairing the accumulation of both physical and human capital as well as productivity and thus not only leading to short-term protracted recession but also lessening the potential for long-term growth. However, institutions can play an essential role in shaping policy responses to exogenous shocks, therefore contributing to mitigating the adverse effects of exogenous shocks on economic activity. Many African countries have embarked, since the early 1990s, in bolder political reforms, which coincide with a wave of economic reforms. These countries experienced significant political transformations, moving from one-party systems to multipartite regimes. In line with the literature that links policy choices to political regimes, Chapter III will explore the implications of such changes on the cyclical properties of fiscal policy. In particular, the main question that will be raised in that chapter is whether democratic institutions have been conducive to more

countercyclical fiscal policies in the region. Additionally, Chapter III will look at the two dimensions of democratic systems, electoral competition and checks and balances, and will attempt to uncover the channel that explains why democracies can smooth business cycles better than autocracies.

CHAPTER I:

PUBLIC SPENDING AND REAL EXCHANGE RATE INSTABILITIES AND GROWTH IN AFRICA: EVIDENCE FROM PANEL DATA[5]

[5] A condensed version of this chapter is forthcoming in the *United Nations' Department of Economic and Social Affairs Working Paper Series*. We would like to thank Jean-Louis Arcand, Jean-Louis Combes, Pingfan Hong, Jules Tapsoba, and one anonymous referee for helpful discussions and pertinent comments on an earlier draft, along with the participants at the "Seminaire des Doctorants" organised by CERDI and held in Clermont-Ferrand in April 2006.

I-INTRODUCTION

African economic performance has been very uneven over time and across countries but appeared to be generally disappointing. GDP growth was relatively robust until the 1973 oil shock, averaging 5.2 per cent during 1966-73. Growth then decelerated significantly, with an annual average rate of 1.6 percent during 1974-93. Finally, growth recovered from 1994 to 1997, averaging 4.1 per cent during this period. These regional patterns are very much similar to country level record on growth. Indeed, the vast majority of countries in the continent have experienced many short-lived growth episodes, which seem to be closely associated with positive exogenous shocks such as terms of trade improvements, large capital inflows, and favourable weather conditions.

Boom periods have been characterised by accommodative fiscal and monetary policies in many countries. Booms often resulted in relatively higher government spending and exchange rate overvaluation. Prolonged unfavourable times, on the other hand, forced countries to adjust by tightening monetary and fiscal policies, and depreciating real exchange rate. This alternation of boom and bust cycles triggered severe instabilities in public spending and real exchange rate[6], which, in turn, have hampered capital accumulation, productivity, and consequently economic growth. There are two schools of thoughts in the literature that offer explanations for the poor economic performance of African countries. The first emphasises deep-rooted institutional and structural constraints in explaining Africa's poor performance. Those constraints are

[6] Heavily inspired by the conclusions of the dependent economy model, policy makers in developing countries tend to focus on the level of absorption and the real exchange rate.

typically geographical, demographical, political, and social in nature. The second stresses inadequate policies, including the lack of openness and macroeconomic instability (high inflation, unsustainable fiscal and current deficits, and real exchange misalignments) as the key driving forces behind slow growth in Africa. Some of the extensions of this strand of literature highlight the potential impact of policy instabilities on economic growth[7]. For instance, seminal work by Guillaumont et al. (1999) uncovers a negative relationship between economic growth and investment and real exchange rate instabilities and presents evidence that these policy-related instabilities[8] are ignited by exogenous shocks or "primary instabilities" such as terms of trade instability, political disturbances, and climate shock. While this chapter builds on Guillaumont et al, it differs from them in two respects. Firstly, it focuses on real exchange rate and public spending, the two key variables of the dependent economy model. Secondly, the analysis and conclusions in this chapter rely on dynamic panel data rather than the commonly use of cross-country data. While acknowledging the critical role played by institutional and structural factors in Africa's poor performance[9], this chapter assesses how instabilities in public spending and real exchange rate played a determinant role in the dismal performance of African economies.

The chapter is organised as follows. Section 2 sets the context by providing an overview of descriptive statistics comparing African countries to other developing

[7] The work of Ramey and Ramey (1995), Hnatkovska and Loayza (2003), which focuses mostly on output volatility, can be considered as part of this literature too.
[8] Real exchange rate can not entirely be considered as policy variable because it could be influenced by exogenous factors.
[9] To some extent, the delimitation policy versus structural and institutional factors can be considered as artificial because of the intertwining between these two set of factors. Further discussion on this issue is presented in annex I-3

countries. The variables of interest in this analysis are average growth rate, real investment rate and instabilities in real exchange rate and government spending. Section 3 presents the models that are used in the discussion, notably the neoclassical growth model and the endogenous growth framework. The latter helps capture dynamics such as the role of policies. Section 4 reviews the existing econometric methodologies and identifies the best suited approach for the estimation strategy. Section 5 presents the empirical results. Section 6 concludes with policy implications based on the results of the empirical work.

II-DATA: AFRICA VERSUS OTHER DEVELOPING REGIONS

2.1 Instability Measurement

Before presenting the descriptive statistical analysis, it is important to specify the measurement of instability in operation in the chapter. Following (Combes et al., 1999), we start with the following equation:

$$X_{i,t} = a_i + b_i t + c_i X_{i,t-1} + \varepsilon_{i,t} \qquad (1)$$

where $X_{i,t}$ is the variable of interest in country i and in period t . This equation suggests that variables can potentially have two components: stationary (a_i) and non-stationary ($b_i t + c_i X_{i,t-1}$). The non-stationary component could display a deterministic or/and a stochastic trends. Instability is then captured by the square of the error term $(\varepsilon_{i,t})^2$. This implies that the standard deviation captures accurately instability when the series are stationary around a constant.

Recent developments in panel data econometrics facilitate panel-based unit root tests. There are two set of panel unit root tests. The first set assumes that the unit root process is the same across cross-sections, meaning that c_i is the same across individuals or countries ($c_i = c$). In contrast, the second category of tests assumes different unit root processes, implying that the constant varies across individuals or countries. Levin, Lin, and Chu (2002) test is part of the first category of tests while the Im, Peseran and Shin (2003) test and the Fisher-type tests (Maddala and Wu, 1999: Choi, 2001), which use the Augmented Dicker-Fuller (ADF) approach, belong to the latter.

Panel unit root tests are conducted on the following equation: $X_{i,t} = a_i + c_i X_{i,t-1} + \varepsilon_{i,t}$, which assumes the absence of a determinist trend[10]. The findings are summarised in tables 1, 2, and 3. They reject the null of a unit root, regardless of the assumptions on the unit root process. The data used to that effect is a panel data from 45 African countries covering a period from 1966 to 1997. The sample size in each test varies and is determined solely by data availability.

Table 1: Panel unit root test based on Levin, Lin, and Chu (2002) approach

	Real Effective Exchange Rate	Government Expenditure to GDP ratio	Government Consumption to GDP ratio
Statistic	-3.318	-3.38	-2.823
Probability*	0.000	0.000	0.002
Cross-sections	33	21	42
Observations	854	376	1274

Note: Levin, Chin and Chu (2002) assume common unit process. The test also assumes asymptotic normality
*Under the null hypothesis, there is a unit root, while under the alternative, there is no unit root.

[10] The data reject the specification that allows deterministic trend.

Table 2: Panel unit root test based on Im, Pesaran, and Shin (2003) approach

	Real Effective Exchange Rate	Government Expenditure to GDP ratio	Government Consumption to GDP ratio
Statistic	-1.710	-3.478	-1.432
Probability*	0.043	0.000	0.076
Cross-sections	33	21	42
Observations	854	376	1274

Note: Im, Pesaran and Shin (2003) assume individual unit process. Their test also assumes asymptotic normality
*Under the null hypothesis, there is a unit root, while under the alternative, there is no unit root.

Table 3: Panel unit root test based on Fisher-Augmented Dicker Fuller approach

	Real Effective Exchange Rate	Government Expenditure to GDP ratio	Government Consumption to GDP ratio
Statistic	84.17	79.768	101.505
Probability*	0.065	0.000	0.0939
Cross-sections	33	21	42
Observations	854	376	1274

Note: Madala and Wu (1999) and Choi (2001) assume individual unit process
*Under the null hypothesis, there is a unit root, while under the alternative, there is no unit root. Probabilities for the Fisher test are computed using an asymptotic Chi-Square distribution.

These results indicate that all the series are stationary around a constant, implying that standard deviations could reflect accurately the instabilities of real effective exchange rate, total government expenditure, and government consumption.

2.2 Comparison Africa vs. other developing regions

The comparison of the African and non-African data on the variables used in the study yields interesting preliminary lessons. While these preliminary findings might be very arbitrary, they nonetheless provide useful guidance regarding the structure of the theoretical model as well as the empirical investigation.

The comparison is based on a sample that covers 147 countries, including 45 Sub-Saharan African countries. The period under consideration spans three decades, from 1966 to 1997. This data set is structured as a panel with observations for each country consisting of four-year averages or standard deviations. Indicators of instability are captured by standard deviations while level indicators are represented by four-year averages. Each country has eight observations: 1966-1969, 1970-1973, 1974-1977, 1978-1981, 1982-1985, 1986-1989, 1990-1993 and 1994-1997. The panel is, however, not balanced because some observations are missing for a number of countries.

Africa is compared to other regions, using the median[11]. A Wilcoxon/Mann-Whitney test[12] is used to that effect.

[11] The use of median rather than the mean is justified on practical grounds. Most of the observations are geometric averages and standard deviations. This means that the "mean comparison" has to be based on the mean of geometric average or standard deviations, which is very hard to interpret.

[12] The Wilcoxon Mann-Whitney test is viewed as one of the most powerful non-parametric tests. It tests the null hypothesis that two samples have identical distribution functions against the alternative hypothesis that the two distribution functions differ with respect to the median. Its main advantage lies on the fact it does not require the differences between two populations to have a normal distribution.

Table 4: The median of some key indicators in Sub-Saharan Africa and in other Developing Countries

	1966-1997	
	Africa	Other Developing Countries
Growth Rate	0.668*	2.25
	{321}	{670}
Real Investment Rate	8.252*	14.187
	{337}	{506}
REER Instability	11.312*	5.379
	{231}	{360}
Total Government Expenditure Instability	2.211*	1.623
	{162}	{377}
Government Consumption Instability	1.315*	0.849
	{304}	{574}

*Statistically significant at one per cent level using Wilcoxon/ Mann-Whitney Test
Figures in brackets indicate the number of observations

The first observation is that the median per capita GDP growth in Africa is significantly lower than that of other developing regions during the period 1966-97. Considering only the classical determinants of economic growth, the differences in GDP growth between these two groups reflect slower capital accumulation in Africa: the median real investment rate in this region is almost half of that of other developing regions. The values of the median real exchange rate instability, the median government expenditure instability, and the median government consumption instability are also statistically much higher in Africa, suggesting that African countries generally experienced more pronounced policy instabilities than other developing countries during the three decades considered here (1966-1997). It might be interesting to look at the evolution of these instabilities in periods of high growth and in times of crisis. This would certainly help understand potential interactions between these instabilities and economic growth.

Table 5: Comparison of the median of some key indicators in Sub-Saharan Africa and in other Developing Countries in 1994-1997 and 1974-1993

	1994-1997		1974-1993	
	Africa	Other Developing Countries	Africa	Other Developing Countries
Growth Rate	1.826	2.214	0.211*	1.980
	{45}	{107}	{208}	{440}
Real Investment Rate	7.930*	13.087	8.356*	14.656
	{45}	{95}	{210}	{310}
REER Instability	8.490*	4.409	12.568*	5.662
	{32}	{47}	{152}	{227}
Total Government Expenditure	1.622	1.441	2.308*	1.786
Instability	{16}	{71}	{129}	{273}
Government Consumption Instability	1.299	0.846	1.367*	0.911
	{44}	{95}	{195}	{380}

*Statistically significant at one per cent level using Wilcoxon/ Mann-Whitney Test
Figures in brackets indicate the number of observations

The 1974-1993 period is arguably the most disappointing era of Africa post-independence economic history while 1994-1997 can be viewed as one of the most promising. The differences in terms of capital accumulation and the instability of the real exchange rate between Africa and other developing countries remain significant during these two periods. However, the fundamental changes that occurred during 1994-97 had to do with government expenditure and real government consumption. More specifically, the instabilities of these two policy variables in Africa decreased to the point that their levels become roughly identical to those of other developing regions. Consequently, one can conjecture that a more stable public spending in Africa might have led to stronger growth performance in this region. This assertion could be supported by the experience of Botswana, the sustained and fastest growing economy in the region.

2.3 The case of Botswana

Botswana is viewed in the literature as the greatest success stories in Africa both in terms of economic growth and human development[13]. Botswana's real GDP per capita grew annually by 6.4 percent from 1966 to 1997. Its record in human development was equally remarkable before the HIV infection took a heavy toll on some of the achievements, especially the improvement in life expectancy.

In stark contrast to other African oil and non-oil commodity producing countries, Botswana is virtually the only country in the continent to have successfully achieved sustained economic growth. Part of this success is attributable to the use of counter-cyclical fiscal policies to manage booms and slumps in the mining sector, particularly the diamond industry, and the effective management of its real exchange rate.

One of the greatest successes of the fiscal policy in Botswana was to achieve public expenditure smoothing while at the same time allowing sustainable increases in public spending. The fiscal policy strategy broadly consisted in running substantial budget surpluses and building impressive international reserves in periods of high diamond prices. Those reserves were drawn in when the diamond market was weak, thus avoiding any drastic cut in expenditures during bust times. The general goal of such strategy was to ensure some stability in public spending. It is worth noting that the predictability of government spending was made possible thanks to National Development Plans. These plans set targets for public expenditures which are in line with expected government revenues and the absorption capacity of the economy.

[13] Some of the achievements in human development have recently been reversed by of HIV/AIDS pandemic.

Botswana also places a major emphasis on the management of the exchange rate so as to avoid real appreciation[14]. Booms usually bring excessive foreign exchange. If these flows are not properly sterilised, which it very often the case, they lead to an appreciation of the real exchange rate and undermine the competitiveness of the tradable sector. In light of this, Botswana managed to prevent its currency from appreciating, allowing therefore other tradable goods, outside the mining sector, to maintain competitiveness in world markets. Additionally, this policy implicitly helped Botswana pursue a relatively successful diversification of its economy.

III- THEORETICAL CONSIDERATIONS

3.1 Solow Model

This chapter uses the Mankiw, Romer and Weil (1992)'s version of the Solow model as the main framework to investigate the determinants of growth. This model is based on a Cobb-Douglas production function with Harrod-neutral, i.e. labour-augmenting, technological progress. It is summarised by an approximation of the growth rate around steady-state, which takes the following form:

$$\ln y - \ln y_0 = (1 - e^{\gamma})\left\{ - \ln y_0 - \left(\frac{\alpha + \beta}{1 - \alpha - \beta} \right) \ln(n + p + d) + \left(\frac{\alpha}{1 - \alpha - \beta} \right) \ln s + \ln A_0 + pt \right\}$$

(2)

[14] There is great deal of evidence associating high instability of real exchange rate with exchange rate appreciation. Conversely, relatively stable real exchange rate would equate with the absence of an appreciation of real exchange rate.

or if human capital is augmented:

$$\ln y - \ln y_0 = (1 - e^{\gamma})\left\{ - \ln y_0 - \left(\frac{\alpha + \beta}{1 - \alpha - \beta}\right)\ln(n + p + d) + \left(\frac{\alpha}{1 - \alpha - \beta}\right)\ln s + \left(\frac{\beta}{1 - \alpha - \beta}\right)\ln h + \ln A_0 + pt \right\} \quad (2')$$

where lny is per-capita output, lny_0 the initial per-capita output, γ the rate of convergence to the steady state, α the share of physical capital in output, β the share of human capital in output, n the growth rate of the population, p the rate of technological progress, t the time, d the depreciation rate, s and h the measures of physical and human capital accumulation, respectively, and lnA_0 the initial level of technology.

For empirical exercise purpose, relations (2) and (2') can be transformed into the following dynamic equations:

$$\ln y_{i,t} - \ln y_{i,t-1} = (1 - e^{-\gamma})\left\{ - \ln y_{i,t-1} - \left(\frac{\alpha}{1-\alpha}\right)\ln(n_{i,t} + p + d) + \left(\frac{\alpha}{1-\alpha}\right)\ln s_{i,t} + \ln A_{i1} + pt \right\} \quad (3)$$

$$\ln y_{i,t} - \ln y_{i,t-1} = (1 - e^{-\gamma})\left\{ - \ln y_{i,t-1} - \left(\frac{\alpha+\beta}{1-\alpha-\beta}\right)\ln(n_{i,t} + p + d) + \left(\frac{\alpha}{1-\alpha-\beta}\right)\ln s_{i,t} + \left(\frac{\beta}{1-\alpha-\beta}\right)\ln h_{i,t} + \ln A_{i1} + pt \right\} \quad (4)$$

Relations (3) and (4) can be transformed into (3') and (4')

$$\ln y_{i,t} = \phi_0 \ln y_{i,t-1} + \phi_1 \ln(n_{i,t} + p + d) + \phi_2 \ln s_{i,t} + \omega W_{i,t} + u_i + n_t + \varepsilon_{i,t} \quad (3')$$

$$\ln y_{i,t} = \phi_0^* \ln y_{i,t-1} + \phi_1^* \ln(n_{i,t} + p + d) + \phi_2^* \ln s_{i,t} + \phi_3^* \ln h_{i,t} + \omega^* W_{i,t} + u_i + n_t + \varepsilon_{i,t} \quad (4')$$

where i denotes country, t the period, u_i the country-specific effect, n_t the time effects, and $\varepsilon_{i,t}$ the error term. It is also worth noting that $W_{i,t}$ is included to capture other determinants of economic growth. Additionally, one key assumption underlying the structure of the model is the existence of constant returns of scale in a Cobb-Douglas function, which could be gauged by testing the hypotheses $\phi_1 + \phi_2 = 0$ or $\phi_1^* + \phi_2^* + \phi_3^* = 0$. The share of physical capital, α, as well as that of human capital, β, can also be derived from the coefficients estimates of equations (3) and (4).

3.2 Criticisms

It is asserted that the neoclassical growth model[15] has two major limitations: the model's conclusion that no growth takes place when the economy reaches the steady state, i.e. in the long-term, unless supported by exogenous technological progress and changes in the population growth rate, and the prediction that per capita income differences among countries should narrow down as time goes on.

The Solow model is criticised on the ground that it predicts that long-term growth is solely driven by exogenous changes in technology or population. This implies that long-term growth relies upon factors that are outside the neoclassical setup and independent of most elements of the production function, preferences, and policies. This

[15] Use interchangeably The Solow Model and neoclassical growth model

conclusion contrasts sharply with recent history that is replete with examples of countries that have been successful in maintaining strong per-capita growth rates over long periods of time. More importantly, growth experience, in the fastest growing economies, has proved to be systematically associated with some of the aspects of production function and economic policies. Robust growth rates have been very often associated with high capital accumulation and sound economic policies.

The second strand of criticisms has to do with the issue of convergence. The neo-classical model, which predicts higher growths in poor countries than in rich countries, turns out to be, in some instances, inadequate in explaining the magnitude and persistence of income gap between low-income countries and high-income countries. The issue of growth divergence among countries is well illustrated by the findings of Bourguignon and Morrisson (2002) and Milanovic (2005) that suggest that 70 percent of income inequality among world citizens is originated from differences in incomes among countries while only 30 percent is explained by income disparities within countries.

Endogenous models have emerged especially as viable alternatives to explain steady-state growth. Romer, Lucas, Robelo, for instance, built models in which long term growth can be sustained endogenously at rates that may be tributary to policy choices, preferences, and technologies. Endogenous growth models are very often classified into two major groups: AK models and R&D models (Jones, 1995). AK growth models such as those of Romer (1986, 1987), Lucas (1988) and Robelo (1991) posit that physical and human capital accumulation can generate sustained economic growth, even in the absence of exogenous technological progress and population growth. The R&D-style

growth models of Romer (1990) and Aghion and Howitt (1992) highlight technological progress as the means to perpetuate growth at the steady-state. In these models, technological change is driven by the activities of economic agents in perpetual quest of innovation.

In some of the AK-styled growth models, especially those involving positive externalities, private returns to investment differ from social returns to investment. This implies that an entirely market-based solution leads to sub-optimal solutions both in terms of growth and capital accumulation. These models therefore implicitly recognised the role of government intervention in eliminating distortions and ensuring ongoing per-capita growth. The beneficial impact of government intervention is also acknowledged when public services are considered as an input to private production[16] (Aschauer, 1988: Barro, 1990). Public spending, therefore, matters for growth.

3.3 The role of economic policies: importance of stability

A close look at the patterns of government expenditures in most African countries suggests a procyclical nature. Commodity price booms and/or large capital inflows encourage many countries to initiate large expenditure programs. These programs are cut back in periods of lower prices and more often in times when external capital flows dry up[17]. Public spending, therefore, tends to be very volatile. Similarly, real exchange rate tends to follow the same patterns as public spending. Substantial inflows of export

[16] Evidence from some developed countries rejects this view. Cadot et al. (2002) find a little economic return of infrastructure spending, once they account for pork barrel.
[17] Some categories of public programs, say public consumption, initiated during boom times tend to be sustained even when bust times follow.

earnings generated by rising commodity prices or/and large foreign capital inflows result in the appreciation of the real exchange rate[18]. This is followed by serious internal and external imbalances, which are addressed by depreciating the real exchange rate. This clearly suggests some swings in the real exchange rate as well. Public spending and real exchange rate instabilities have the potential to hamper economic growth. In fact, they have a detrimental impact on capital (human and physical) accumulation while at the same time undermining the total factor productivity: the efficiency with which capital and labour are combined.

3.3.1 Public spending instability and growth

Public spending instability might incur both direct and indirect costs for economic growth. Public spending instability may influence economic growth "directly" through the efficiency channel or/and "indirectly" through its effect on the accumulation of factors of production, namely capital.

3.3.1.1. The productivity channel

Two lines of arguments are typically put forth to justify a potential negative impact of public spending instability on productivity. On the one hand, intense fluctuations in government spending give rise to erratic provision of public services, such

[18] If the appreciation of the real exchange rate endures for some time, it leads to a Dutch disease phenomenon: a contraction of the non-commodity economy.

as infrastructure facilities, which leads to weak productivity (Calderòn and Servén, 2003). On the other hand, public spending instability, which is very often associated with boom-bust cycles, produces ratchet effects on public spending, notably on public consumption (Guillaumont, 2006)[19]. Ratchet effects eventually result in an upward trend in public spending in the long run. If one assumes a heavy fiscal reliance on monetary financing, higher government spending leads to high and volatile inflation, the blurring of market signals, and ultimately a misallocation of resources and weak productivity.

3.3.1.2 The factor accumulation channel

As mentioned earlier, public sector expands very often in boom periods. The expansion turns out not be to be sustainable, especially in bad times or/and when external financing dries up. Public spending is then cut in bust periods. This fiscal adjustment is achieved mainly through the reduction of some categories of public investment, such as investment in infrastructural facilities, or some specific current expenditures, including maintenance expenditures, which are complementary to private investment. Such policies affect private investment and constraint economic growth as earlier suggested in the endogenous growth model. Moreover, cuts in public spending often lead to protracted recession, which can have long-lasting effects. For instance Ocampo (2002) indicates that firms, in situation of prolonged recession, may experience irreversible losses of material and immaterial assets, which include, among others, the social capital built as well as the

[19] Public wages and other current expenditures increase significantly in good times and do not adjust or partially adjust in bad times.

institutional and technological settings built within the firms. He also alludes to the irreparable damages caused by recessions to human capital: "the human capital of the unemployed or the underemployed may be permanently lost; and the children may leave school and never return".

Finally, public spending instability may represent an important source of real exchange instability, which in turn could constraint growth through direct and indirect channels (Ghura and Greenes, 1993: Soderling, 2002).

3.3.2 Real exchange rate instability and growth

Again, we identify two sorts of mediating channels from real exchange rate instability to disappointing economic growth: the "direct" or total productivity channel and the "indirect" channels through the impact on factor accumulation.

3.3.2.1 The productivity channel

The alternation of real exchange appreciations and depreciations can modify the structure of the economy and generate enduring effects on productivity and economic growth. The "Dutch Disease" analysis captures very well these dynamics (Corden, 1982: Corden and Neary, 1984 : Gylafason et al., 1999). The analysis considers three sectors, namely a booming export sector, a lagging export sector (or traditional export sector), and a nontradable sector. A natural resource boom results in the increase of export earnings and higher domestic spending. If some of the windfalls are spent on nontradable goods, which is very often the case, higher domestic demand drives up the relative price

of nontradables and leads to real exchange rate appreciation[20]. The appreciation of the real exchange rate undermines the competitiveness of the country's exports and causes the contraction of the traditional export sector. This effect is termed "the spending effect". In addition to this effect, a resource movement effect also takes place, with labour and capital moving from the traditional export sector to the nontradable sector, to meet the rise in domestic demand, and to the booming export sector. In sum, booms[21] can potentially bring about important changes in the structure of economies where they occur. Some sectors, such as the manufacturing sector, with significant productivity spillovers to the rest of the economy, might face severe contractions, which could eventually lead to their disappearance. Real exchange rate appreciation might generate "inertia effects" in the sense that the end of booms and subsequent deprecations in real exchange rate may turn not to be sufficient for the recovery of the manufactory sector. Given potential positive externalities of the manufacturing sector, a persistent decline of this sector lowers productivity and long term growth.

Apart from its sector-specific effects on growth, real exchange rate instability can be detrimental to productivity in the economy in general. Real exchange rate fluctuations distort market signals and lead to an ineffective and inefficient allocation of investment. This argument has been largely supported in the literature (Aizenmann and Marion, 1999: Ghura and Greennes, 1993: Guillaumont, 1999: Serven, 1997).

[20] This basically reflects instances where exchange rate is fixed. If exchange rate is flexible, nominal appreciation could be the main cause of real exchange rate appreciation.
[21] The analysis was initially formulated in the context of natural resource boom but could also well describe situations of impressive aid flows (Rajan and Subramanian, 2005).

3.3.2.2 The factor accumulation channel

The instability of real exchange rate can also impact negatively the level of investment because of the uncertainty it creates (Guillaumont et al., 1999). Uncertainty may well be perceived by economic agents as a loss of credibility in government policies, which can ultimately diminish the expected return on private investment and therefore depress growth. Additionally, it is generally argued that under conditions of uncertainty, risk-adverse economic agents predict greater instability in expected returns, and may cut back in their investments, while risk-neutral agents may adopt a "wait and see" attitude in terms of investment strategy (Azam et al., 2002). In any case, the outcome of greater uncertainty is a fall in investment rates and lower growth.

IV-ECONOMETRIC METHODOLOGY

The empirical growth literature has until recently relied, to a large degree, on Ordinary Least Squares, henceforth OLS, to investigate the determinants of economic expansion. This technique has been severely criticised on the ground that it does not properly address the problems of measurement error, omitted variables, and endogeneity, which are common to growth regressions.

4.1 Ineffective OLS

To make easy the discussion on how ineffective is OLS in the presence of those problems, we rewrite equation (4) and (4') as $\ln y_{i,t} = \phi_0 \ln y_{i,t-1} + \xi Z_{i,t} + u_i + \varepsilon_{i,t}$ (5)

where $Z_{i,t}$ represents the vector of all the explanatory variables of economic growth, except the natural logarithm of initial per capita income, and ξ the associated vector of coefficients. The issue of measurement error can be illustrated by the following: assume that $y^*_{i,t}$ and $Z^*_{i,t}$ capture $y_{i,t}$ and $Z_{i,t}$, with $w_{i,t}$ and $n_{i,t}$ their respective measurement errors:

$$\ln y^*_{i,t} = \ln y_{i,t} + n_{i,t} \quad (6)$$

$$Z^*_{i,t} = Z_{i,t} + w_{i,t} \quad (7)$$

Combining (5) (6) and (7) yields

$$\ln y^*_{i,t} = \phi_0 \ln y^*_{i,t-1} + \xi Z^*_{i,t} + u_i + \psi_{i,t} \text{ with } \psi_{i,t} = \varepsilon_{i,t} + n_{i,t} - \phi_0 n_{i,t-1} - \xi w_{i,t} \quad (8)$$

One of the key assumptions underlying the use of OLS technique is the absence of correlation between the regressors, $Z^*_{i,t}$ and $y^*_{i,t-1}$, and the disturbance $u_i + \psi_{i,t}$. That hypothesis does not hold as:

$$E\left[(Z_{i,t} + w_{i,t})(u_i + \varepsilon_{i,t} + n_{i,t} - \phi_0 n_{i,t-1} - \xi w_{i,t})\right] \neq 0 \text{ more specifically because } E(w^2_{i,t}) \neq 0 \quad (9)$$

$$E\left[(\ln y_{i,t} + n_{i,t})(u_i + \varepsilon_{i,t} + n_{i,t} - \phi_0 n_{i,t-1} - \xi w_{i,t})\right] \neq 0 \text{ because } E(n^2_{i,t}) \neq 0 \quad (10)$$

Further, the omission of some pertinent explanatory variables can also make OLS estimates biased and inconsistent. In fact, omitted variable, for instance time-invariant

country-specific characteristics such as the initial level of technology, will be absorbed by the disturbance $u_i + \psi_{i,t}$ in equation (5), making therefore $E\left[(Z_{i,t}(u_i + w_{i,t})\right] \neq 0$.

Finally, the endogeneity of some of the regressors leads to results that are very similar to those reported in the case of omitted variable. For instance, $y_{i,t-1}$ is mechanically correlated with ε_{is} in (5) for $s < t$, $E\left[(y_{i,t-1})(\varepsilon_{is})\right] \neq 0$, violating therefore the assumption that all the explanatory variables are exogenous.

4.2 Instrumental Variable Estimator of Anderson and Hsiao (1982)

One way of addressing both the endogeneity and omitted variable is to use the methodology suggested by Anderson and Hsiao (1982). This consists in eliminating country-specific effects, u_i, by time differencing equation (5):

$$\Delta(\ln y_{i,t}) = \phi_0 \Delta(\ln y_{i,t-1}) + \xi \Delta(Z_{i,t}) + \Delta(\varepsilon_{i,t}) \quad (11)$$

By construction, $\Delta(\ln y_{i,t-1})$ becomes correlated with $\Delta(\varepsilon_{i,t})$, thus indicating the need to instrument suspected endogenous variables. Assuming no serial correlation in $\varepsilon_{i,t}$, $\ln y_{i,t-2}$ is not correlated with $\Delta(\varepsilon_{i,t})$ and can serve as instrument for $\Delta(\ln y_{i,t-1})$. The Anderson and Hsiao's instrumental methodology guarantees therefore consistent estimates.

4.3 First-Differenced Generalised Method-of-Moments Estimator (GMM) and System Generalised Method-of-Moments Estimator (SYS-GMM)

Even though Anderson Hsiao's instrumental variable estimator provides consistent estimates, it is not efficient because additional lagged values of the dependent variable, $lny_{i,t-3}$, $lny_{i,t-4}$, $lny_{i,t-4}...lny_{i,t-k}$ and $Z_{i,t-1}$, $Z_{i,t-2}...Z_{i,t-k}$ [22] are also good instruments under the assumption of no further serial correlation in $\varepsilon_{i,t}$.

$$E(\ln y_{i,t-p}\Delta\varepsilon_{i,t}) = 0 \text{ for } p=2, 3,..., (T-1) \qquad (12)$$

$$E(Z_{i,t-r}\Delta\varepsilon_{i,t}) = 0 \quad \text{for } r=1, 2, 3,..., (T-1) \qquad (13)$$

On that basis, Arrelano and Bond (1991) suggest a Generalised Method of Moments Estimator (GMM), well-known by "first-differenced GMM estimator" that combines the suggested instruments efficiently. However, Blundell and Bond (1998) demonstrate that first-differenced GMM have poor finite sample properties, especially when lagged levels of the variables are not strongly correlated with subsequent first-differences. Bond et al. (2001) indicate that this is likely to be the case when the series are close to a random walk or when variance of the country-specific effects, n_i , rises relative to the variance of error term ε_{is} .

In order to address the problem associated with persistent panel data, Blundell and Bond (1998) develop a system GMM estimator that is based on a simultaneous system of two equations, which are equations (5) and (11). Lagged levels of $lny_{i,t}$ and $Z_{i,t}$ serve as instruments for the differenced equation (11) while their lagged first-differences are the instruments for the equation in level (5):

[22] Assuming that some of regressors in $Z_{i,t}$ are endogenous.

$$E(\Delta \ln y_{i,t-p}\varepsilon_{i,t}) = 0 \text{ and } E(\Delta Z_{i,t-r}\varepsilon_{i,t}) = 0 \text{ for } p \text{ and } r=2,\ldots, (T-1) \qquad (14)$$

$$E(\ln y_{i,t-p}\Delta\varepsilon_{i,t}) = 0 \text{ and } E(\ln Z_{i,t-r}\Delta\varepsilon_{i,t}) = 0 \text{ for } p \text{ and } r=2,\ldots, (T-1) \qquad (15)$$

The validity of the system GMM as a consistent estimator can be ascertained by showing that the error term is not serially correlated, and the instruments used are the adequate ones. The first condition is gauged by Arrelano and Bond (1991) test for autocorrelation, which determines whether the first-differenced error term has second-order. The second condition is verified by a test of over-identifying restrictions, which could be either the Sargan (1958) test or Hansen (1982) test.

V-EMPIRICAL RESULTS

The sample used in the empirical analysis includes 45 African countries but the sample size in each regression varies and is determined solely by data availability. The period covered is from 1966 to 1997. This data set is structured as a panel with observations for each country consisting of four-year averages, standard deviations or data in levels provided quadrennially. Real exchange rate and public spending instabilities are captured by standard deviations estimated on a four year period. The investment to GDP ratio is built by taking four-year non-overlapping averages. Real per capita GDP is obtained quadrennially, starting from 1966 and ending in 1997. Each country has eight observations: 1966-1969, 1970-1973, 1974-1977, 1978-1981, 1982-1985, 1986-1989, 1990-1993 and 1994-1997. The panel is, however, not balanced because some observations are missing for a number of countries.

5.1 Validity of the Solow Model and its augmented version

Regressions (2) and (3) report the results of the estimation of the Solow Model and its augmented version. Just as primary education enrolment rate captures human capital accumulation in regression (2), so does secondary school enrolment rate in regression[23] (3).

[23] We couldn't use Barro and Lee (2000)'s average years of schooling because these data are provided quinquennially, starting in 1960,…and ending in 1990. We would have ended up with a very small sample. More importantly, the formulation that is adopted in this chapter uses the rate of accumulation rather the level of human of capital. See Mankiw et al. (1992) pp. 417-418. Furthermore, Pritchett (1996) argues that school enrolments reflect human capital stock only if constant over time.

Table 6: SYS-GMM Estimates of the Solow Model

Dependent variable is growth rate of log of per capita GDP

Variables	"Basic Model"	Augmented with Human Capital	
	(1)	(2)	(3)
$Ln(GDP_{it-1})$	-0.0947***	-0.0702*	-0.0619*
	(0.0250)	(0.0410)	(0.0355)
Ln(Investment Rate)	0.0840***	0.1397***	0.1182**
	(0.0227)	(0.0403)	(0.0459)
$Ln(n_{i,t}+g+d)$	-0.2115***	-0.1965***	-0.1528*
	(0.0474)	(0.0601)	(0.0777)
Ln(Primary)		-0.0599	
		(0.0648)	
Ln(Secondary)			-0.0443
			(0.0322)
Number of Observations	282	173	166
Number of Countries	41	41	41
Chi-Square(Hansen over-id test)	1.00	1.00	1.00
AR(2) (Test for Serial Autocorrelation)	0.296	0.489	0.376
$P(H_0 : \Phi_1+\Phi_2=0)$	0.0021		
$P(H_0 : \Phi_1+\Phi_2+\Phi_3=0)$		0.1195	0.3080
Implied α	0.6908***	0.6052***	0.6214***
	(0.0189)	(0.1841)	(0.2152)
Variables that are instrumented	All the explanatory variables	All the explanatory variables	All the explanatory variables

Note: Robust standard errors in parentheses
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
* denotes significance of the estimates at 10 percent critical level
The physical capital share α is estimated using the Delta Method. Time dummies are included and they turn not to be significant.

The inclusion of a human capital measure leads to three main results. First, the coefficient on investment rate is, in absolute terms, significantly higher in regressions (2) and (3) than in regression (1). In other words, the inclusion of human capital helps increase the predictive content of physical capital accumulation. In contrast, some variables, such as lagged GDP, population growth rate, see their coefficients decline. Second, human capital accumulation, captured by primary and secondary enrolments, is

negatively associated with per capita growth, albeit not significantly. This finding does not mean that human capital accumulation is irrelevant for economic growth. Numerous studies found similar result. Pritchett (1996) suggests three explanations. First, the initial human capital might have initially been so poor that any improvement in subsequent periods resulted in a scant improvement in skills and productivity. Second, marginal returns to education might have dropped as a result of the combination of increased supply of educated labour and a virtually unchanged demand for educated labour. Finally, the institutional setup might have been so deleterious that human capital accumulation did not lead to per-capita growth. In addition to these explanations, the lack of significance could also be qualified by measurement problems. Arcand and d'Hombres (2005) challenge the use of school enrolment indicators as the rate of human capital accumulation, arguing that school enrolments in period *t* do not capture the flux of investment in human capital for the same period.

We test the validity of the Solow Model and its augmented version[24] by checking if the sum of the coefficients on investment, population growth rate and on human capital (if necessary) is equal to 0. In addition, we estimate the magnitude of the share of physical capital in total output and compare it to the widely accepted values[25]. The results are reported in the bottom of Table 6. They generally reject both the Solow Model and its augmented version. The Solow Model is rejected on two accounts. First, the sum of the coefficients on investment and population growth rate turns to be significantly different from 0 at the 5 percent level in the regression. Second, the implied share of physical

[24] It is a test on the existence of constant returns of scale in a Cobb-Douglas function.
[25] The number that comes up in the literature is 1/3 (Mankiw et al., 1992).

capital is equal to 0.6908, which is well above the usual one-third found in the literature. On the other hand, the validity of the Solow Model augmented with human capital can be challenged because the estimated share of physical capital in total output varies from 0.6052 to 0.6214, which again is relatively higher than the norms.

5.2 Core Model

We turn to the issue of interest of this chapter by investigating the potential impact of policy- related instabilities on economic growth. Public spending and real exchange rate instabilities are therefore added to the Augmented Solow construct[26]. To ensure that the analysis is robust, we use two measures of public spending, especially government consumption and total government expenditure[27].

[27] We try to go further in the breakdown in an attempt to identify current and capital expenditures but could not get enough observations to be used in the empirical investigation.

Table 7: SYS-GMM Estimates of the Model of Growth and Instabilities of Real Exchange Rate and Public Spending

Dependent variable is growth rate of log of per capita GDP

Variables	(4)	(5)
$Ln(GDP_{it-1})$	-0.0570*	-0.1112***
	(0.0324)	(0.0333)
Ln(Investment Rate)	0.1671***	0.1933***
	(0.0268)	(0.0333)
$Ln(n_{i,t}+g+d)$	-0.0915	-0.2206**
	(0.0833)	(0.1039)
Ln(Primary)	-00161	-0.0050
	(0.0301)	(0.0335)
Ln(Instability of REER)	-0.0301***	-0.0405***
	(0.0075)	(0.0129)
Ln(Instability of GOVEXP Ratio)	-0.0226	
	(0.0229)	
Ln(Instability of GC Ratio)		0.0025
		(0.0226)
Number of Observations	74	105
Number of Countries	27	30
Chi-Square(Hansen over-id test)	1.00	1.00
AR(2) (Test for Serial Autocorrelation)	0.267	0.211
Variables that are instrumented	All the explanatory variables	All the explanatory variables

Note: Robust standard errors in parentheses
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
* denotes significance of the estimates at 10 percent critical level
REER stands for real exchange rate while GOVEXP and GC stand for total government expenditure and government consumption, respectively.
Nakamura-Nakamura test indicates that both real exchange rate and public spending volatilities are endogenous
Time dummies are included and they turn not to be significant.

This exercise is summarised in regressions (4) and (5). Except for population growth rate, the other significant explanatory variables used in the Solow construct remain significant and appear with the expected signs[28]. There is a significantly negative

[28] A constant was added in all the regressions presented in the chapter but the main results remain roughly unchanged.

coefficient on initial GDP and a robust positive coefficient on investment. Population growth rate displays a negative coefficient, which turns to be statistically robust in regression (5) and not in regression (4). Human capital, captured by primary education, remains statistically insignificant. In addition to be broadly consistent with previous findings, the results support the prediction that real exchange rate instability exerts a direct negative impact on growth while at the same time indicating a lack of a direct statistically strong effect of public spending instability on economic growth.

Table 8: SYS-GMM Estimates of the Model of Growth and Instabilities of Real Exchange Rate and Public Spending based on 8-year sub periods

Dependent variable is growth rate of log of per capita GDP

Variables	(6)	(7)
$Ln(GDP_{it-1})$	-0.0653	-0.0638
	(0.0594)	(0.0453)
Ln(Investment Rate)	0.2866***	0.1978**
	(0.0687)	(0.0953)
$Ln(n_{i,t}+g+d)$	-0.0963	0.2384
	(0.2061)	(0.1635)
Ln(Primary)	-0.0469	0.1822
	(0.1939)	(0.1154)
Ln(Instability of REER)	-0.0329**	-0.0278**
	(0.0156)	(0.0140)
Ln(Instability of GOVEXP Ratio)	-0.0595	
	(0.0549)	
Ln(Instability of GC Ratio)		-0.0758
		(0.0704)
Number of Observations	55	69
Number of Countries	26	30
Chi-Square(Hansen over-id test)	0.722	0.334
AR(2) (Test for Serial Autocorrelation)	..	..
Variables that are instrumented	All the explanatory variables	All the explanatory variables

Note: Robust standard errors in parentheses
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
REER stands for real exchange rate while GOVEXP and GC stand for total government expenditure and government consumption, respectively.
Nakamura-Nakamura test indicates that both real exchange rate and public spending volatilities are endogenous
Time dummies are included and they turn not to be significant.

It is worth recalling that the instability measure is calculated on a four-year period, which might seem too short to gauge instability. To address this legitimate concern, we repeat the same exercise but using an eight-year sub-period instead[29]. Results are reported in table 8 and consistently confirm the previous main finding notably that

[29] Our dataset covers the period 1966-1997. This means that attempt to use 16 year sub-period will lead to only two observations per country and therefore could not use the system GMM.

among the two instabilities previously identified only real exchange rate instability seems to influence directly growth. The magnitude of the coefficients associated with real exchange rate instability turns, however, to be more modest, ranging from -0.0278 to -0.0329, compared from -0.0301 to -0.0405 previously found.

These results warrant two comments. On the one hand, the direct negative impact of real exchange rate instability on growth implies that real exchange rate instability influences negatively total factor productivity or suggests that the productivity channel is at work[30]. On the other hand, insignificant coefficient on public spending instability means that either such variation does not operate through the total factor productivity channel or it unfolds through other factors that have not been accounted for in the regressions. This leads us to investigate the mediating channels though which government spending instability potentially hampers economic growth.

5.2.1 The potential channels from public spending instability to poor economic growth

5.2.1.1 The productivity channel

In line with the ratchet effect argument developed in the theoretical construct, we introduce the level of public spending in the core regression. The purpose of such an exercise is to see if public spending instability leads to higher public spending, which in

[30]In a growth regression, the significance of additional variable, to the traditional important control variables such as investment rate, lagged per capita GDP and human capital, can be interpreted as some influence of total factor productivity.

turn might lower economic growth through the productivity channel. The results are reported in table 9.

Table 9: SYS-GMM Estimates of the Model of Growth, with a focus on potential ratchet effects

Dependent variable is growth rate of log of per capita GDP		
Variables	(8)	(9)
$Ln(GDP_{it-1})$	-0.0343	-0.1084***
	(0.0487)	(0.0301)
Ln(Investment Rate)	0.1361***	0.1877***
	(0.0285)	(0.0379)
$Ln(n_{i,t}+g+d)$	-0.0958	-0.2014**
	(0.0999)	(0.0841)
Ln(Primary)	-0.0150	-0.0108
	(0.0359)	(0.0336)
Ln(Instability of REER)	-0.0262***	-0.0348**
	(0.0065)	(0.0150)
Ln(GOVEXP Ratio)	-0.0395	
	(0.0627)	
Ln(Instability of GOVEXP Ratio)	-0.0173	
	(0.0213)	
Ln(GC Ratio)		0.0193
		(0.0448)
Ln(Instability of GC Ratio)		-0.0029
		(0.0185)
Number of Observations	74	105
Number of Countries	27	30
Chi-Square(Hansen over-id test)	1.00	1.00
AR(2) (Test for Serial Autocorrelation)	0.266	0.2222
Variables that are instrumented	All the explanatory variables	All the explanatory variables

Note: Robust standard errors in parentheses
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
REER stands for real exchange rate while GOVEXP and GC stand for total government expenditure and government consumption, respectively.
Nakamura-Nakamura test indicates that both real exchange rate and public spending volatilities are endogenous
Time dummies are included and they turn not to be significant.

Most of the previous significant controls continue to have a predictive content over per capita GDP growth while both levels and instabilities of government total

expenditure and consumption turn not to have an explanatory power. The lack of statistical significance of public spending instability and non-significance of its level when included in the same regression do not support a ratchet effect argument[31].

Table 10: SYS-GMM Estimates of the Model of Growth and Instabilities of Real Exchange Rate and Public Spending

Dependent variable is growth rate of log of per capita GDP

Variables	(10)	(11)	(12)	(13)
$Ln(GDP_{it-1})$	-0.0570*	-0.0683**	-0.1112***	-0.0871**
	(0.0324)	(0.0304)	(0.0333)	(0.0399)
Ln(Investment Rate)	0.1671***	0.2097***	0.1933***	0.1873***
	(0.0268)	(0.0345)	(0.0333)	(0.0399)
$Ln(n_{i,t}+g+d)$	-0.0915	-0.0503	-0.2206**	-0.1764**
	(0.0833)	(0.0851)	(0.1039)	(0.0822)
Ln(Primary)	-00161	-0.0096	-0.0050	-0.0399
	(0.0301)	(0.0312)	(0.0335)	(0.0326)
Ln(Instability of REER)	-0.0301***		-0.0405***	
	(0.0075)		(0.0129)	
Ln(Instability of GOVEXP Ratio)	-0.0226	-0.0387*		
	(0.0229)	(0.0209)		
Ln(Instability of GC Ratio)			0.0025	-0.0402**
			(0.0226)	(0.0194)
Number of Observations	74	93	105	145
Number of Countries	27	33	30	40
Chi-Square(Hansen over-id test)	1.00	1.00	1.00	1.00
AR(2) (Test for Serial Autocorrelation)	0.267	0.283	0.211	0.521
Variables that are instrumented	All the explanatory variables	All the explanatory variables	All the explanatory variables	All the explanatory variables

Note: Robust standard errors in parentheses
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
* denotes significance of the estimates at 10 percent critical level
REER stands for real exchange rate while GOVEXP and GC stand for government total expenditure and government consumption, respectively.
Nakamura-Nakamura test indicates that both real exchange rate and public spending volatilities are endogenous
Time dummies are included and they turn not to be significant.

[31] This result is not surprising insofar as we previously found both government total expenditure and government consumption ratios to be stationary around a drift. In other words, public spending to GDP ratios are not following an upward trend.

We explore another potential productivity channel, that is, the channel via real exchange rate instability. Strong evidence from the literature supports the view that fluctuations in public spending explain real exchange rate instability and real exchange rate appreciation (Ghura and Greenes, 1993: Soderling, 2002). The most straightforward approach to uncover this channel is to compare two set of regressions: one that includes both public spending and real exchange rate instabilities and the other that accounts for public spending only. Results are presented in Table 10. Public spending, either captured by government total expenditure or government consumption, turns negative and significant when real exchange rate fluctuations are not factored in (regressions 11 and 13). However, the same variables appear statistically insignificant once real exchange rate instability is included in regressions 10 and 12. These results lend a strong support to the contention that government spending fluctuations amplify real exchange rate instability, which in turn depresses total factor productivity and ultimately economic expansion.

5.2.1.2 The factor accumulation channel

A more systematic way to explore a potential investment channel is to look at the determinants of investment. We therefore regress real investment rate on all the explanatory variables of the core growth regression and a new control, namely, the lagged investment rate. Table 11 presents results that do not support any evidence of an

investment channel[32]. Public spending instability seems not to influence directly the level of investment[33].

Table 11: SYS-GMM Estimates of the Determinants of Real Investment

Dependent variable is real investment rate

Variables	(14)	(15)
Ln(Investment Rate$_{it-1}$)	0.6664***	0.6719**
	(0.0448)	(0.0739)
Ln(GDP$_{it-1}$)	0.1240	0.1384*
	(0.0844)	(0.0752)
Ln($n_{i,t}$+g+d)	-0.0069	0.0262
	(0.2541)	(0.2141)
Ln(Primary)	0.00326	-0.0155
	(0.0652)	(0.0571)
Ln(Instability of REER)	-0.044*	-0.0615*
	(0.0262)	(0.0350)
Ln(Instability of GOVEXP Ratio)	0.0280	
	(0.0220)	
Ln(Instability of GC Ratio)		0.0286
		(0.0381)
Number of Observations	74	105
Number of Countries	27	30
Chi-Square(Hansen over-id test)	1.00	1.00
AR(2) (Test for Serial Autocorrelation)	0.433	0.279
Variables that are instrumented	All the explanatory variables	All the explanatory variables

Note: Robust standard errors in parentheses
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
* denotes significance of the estimates at 10 percent critical level
REER stands for real exchange rate while GOVEXP and GC stand for government total expenditure and government consumption, respectively.
Nakamura-Nakamura test indicates that both real exchange rate and public spending volatilities are endogenous
Time dummies are included and they turn not to be significant.

[32] We also got the evidence of the absence of an investment channel by comparing a growth regression that includes investment to a regression that does not. In both regressions, public spending instability turns not to be statistically significant.
[33] Evidence of an indirect channel through real exchange rate instability is also found by putting side by side an investment rate regression that contains both real exchange rate and public spending instabilities and an investment regression that contains public spending instability only. Public spending appears significant only in the second regression.

5.2.2 The potential channels from real exchange rate instability to poor economic growth

5.2.2.1 The *productivity channel*

Results from Table 7 clearly indicate a direct negative impact of real exchange rate fluctuations on growth. As mentioned before, this "direct effect" indicates that real exchange instability has a negative impact on growth and that impact is felt through meagre total productivity factor growth. The finding is quite close and broadly consistent with what was uncovered by Aizenman and Marion (1999), Ghura and Greenes (1993), Guillaumont et al. (1999) and Serven (1997).

Table 12: SYS-GMM Estimates of the Model of Growth, with a focus on potential asymmetric effects

Dependent variable is growth rate of log of per capita GDP

Variables	(16)	(17)
$Ln(GDP_{it-1})$	-0.0663**	-0.1170***
	(0.0304)	(0.0296)
Ln(Investment Rate)	0.1755***	0.1985***
	(0.0306)	(0.0297)
$Ln(n_{i,t}+g+d)$	-0.1006	-0.2188**
	(0.0819)	(0.0973)
Ln(Primary)	-0.0128	0.0026
	(0.0263)	(0.0296)
APPREER	-0.0309***	-0.0375***
	(0.0059)	(0.0126)
DEPRREER	-0.0133	-0.0363
	(0.0118)	(0.0223)
Ln(Instability of GOVEXP Ratio)	-0.0172	
	(0.0193)	
Ln(Instability of GC Ratio)		0.0047
		(0.0208)
Number of Observations	74	105
Number of Countries	27	30
Chi-Square(Hansen over-id test)	1.00	1.00
AR(2) (Test for Serial Autocorrelation)	0.279	0.211
Variables that are instrumented	All the explanatory variables	All the explanatory variables

Note: Robust standard errors in parentheses
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
REER stands for real exchange rate while GOVEXP and GC stand for government total expenditure and government consumption, respectively.
APPREER is equal to 1 times Ln(Instability of REER) if there is an appreciation in real exchange rate and 0 otherwise. Similarly, DEPREER is equal to 1 times Ln(Instability of REER) if there is a depreciation in real exchange rate and 0 otherwise.
Time dummies are included and they turn not to be significant.

Table 13: SYS-GMM Estimates of the Model of Growth, with a focus on potential inertia effects

Dependent variable is growth rate of log of per capita GDP		
Variables	(18)	(19)
$Ln(GDP_{it-1})$	-0.0570*	-0.0811**
	(0.0353)	
Ln(Investment Rate)	0.1545***	0.1473***
	(0.0323)	(0.0431)
$Ln(n_{i,t}+g+d)$	-0.0996	-0.1772*
	(0.1035)	(0.0943)
Ln(Primary)	-0.0138	-0.0049
	(0.0299)	(0.0286)
Ln(Instability of REER)	-0.0297***	-0.0456**
	(0.0078)	(0.0189)
$APPR_{t-1}$* $DEPR_t$	-0.0145	-0.0991*
	(0.0310)	(0.0514)
Ln(Instability of GOVEXP Ratio)	-0.0253	
	(0.0164)	
Ln(Instability of GC Ratio)		-0.0027
		(0.0222)
Number of Observations	69	98
Number of Countries	27	30
Chi-Square(Hansen over-id test)	1.00	1.00
AR(2) (Test for Serial Autocorrelation)	0.264	0.181
Variables that are instrumented	All the explanatory variables	All the explanatory variables

Note: Robust standard errors in parentheses
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
* denotes significance of the estimates at 10 percent critical level
REER stands for real exchange rate while GOVEXP and GC stand for government total expenditure and government consumption, respectively.
APPR and DEPR are dummy variables that capture real exchange rate appreciation and real exchange depreciation, respectively.
Time dummies are included and they turn not to be significant.

Having found that real exchange rate instability depresses total factor productivity and therefore economic growth, we then investigate potential asymmetric effects of real exchange rate instability and inertia effects of real exchange appreciation.

a. Asymmetric effects of real exchange instability

Referring to real exchange instability implies accounting for both real exchange rate appreciation and real exchange rate depreciation. Therefore, it will be interesting to find out which of these two components of real exchange instability drives the result. This exercise amounts to exploring potential asymmetric effects. We introduce a multiplicative variable *APPREER* and *DEPREER* in the core regressions to account for these effects. *APPREER* is a multiplicative variable equal to 1 times real exchange rate instability if there is an appreciation in real exchange rate and 0 otherwise. Similarly, *DEPREER* is equal to 1 times real exchange rate instability if there is depreciation in real exchange rate and 0 otherwise. Table 12 summarises the results. These results indicate that among the newly included variables only *APPREER* turns to have a significant predictive content over per-capita growth, which suggest that the detrimental effect of real exchange rate instability on growth is mostly driven by real exchange rate appreciation.

b. Inertia effects of real exchange rate appreciation

In line with the theoretical argument developed in section 3.3, we explore further potential inertia effects of real exchange rate appreciation on total productivity factor and growth. We introduce a multiplicative variable $APPR_{t-1}*DEPR_t$ in the core regressions. That variable is a combination of the lagged of a dummy variable *APPR*, which captures real exchange rate appreciation, and a dummy variable *DEPR*, which stands for real

exchange depreciation. The idea being captured here is that initial real exchange rate appreciation has an enduring impact in subsequent period even if that subsequent period is characterised by real exchange depreciation. Results are reported in table 13. The multiplicative variable $APPR_{t-1}*DEPR_t$ turns with the expected sign both in regressions 18 and 19. However, the coefficient on this multiplicative variable is statistically significant only in regression 19. These results tend to support partially the contention that real exchange rate appreciation exerts an enduring impact on per capita growth.

5.2.2.2 The factor accumulation channel

The regressions presented in table 11 show a significant negative relationship between real exchange rate instability and investment, suggesting real exchange rate instability also affects growth in a significant and negative way through the investment channel. This result is in line with what was found by Guillaumont et al. (1999).

To recap, instabilities of public spending and real exchange rate exert detrimental impact on growth through a variety of channels. On the one hand, the effects of real exchange rate instability work through both meagre total factor productivity and lower investment. One the other, government spending instability seems to have indirect effects only. It amplifies real exchange rate instability, which in turn depresses total productivity factor and investment.

VI- CONCLUSION

Recent economic research on Africa has extensively explored possible reasons for the continent's dismal growth performance. This debate has been dominated by two lines of argument: those who attribute Africa's poor performance to poor policies and those who explain it by structural and institutional impediments. That classification might be very simplistic because omitting the view that indicates that both factors are interrelated. While acknowledging the critical role played by institutional and structural factors in Africa's poor performance, this chapter revisits the policy argument along the lines of the arguments developed by Guillaumont et al. (1999) and explores the role played by policy instabilities. However, the approach adopted in this chapter differs from earlier work in two perspectives. First, it relies entirely on the key variables underscored in the dependent economy model, namely the real exchange rate and the absorption. Second, the analysis is based on dynamic panel data instead of cross-country data. Using the system GMM, the most appropriate econometric technique for our model, we find only real exchange instability to have a direct significant effect on economic growth. The combination of a statistical significance of real exchange instabilities and the non-significance of public spending instability, when incorporated in the same regression, indicates that both are not two distinct factors regarding their impact on per capita growth. Public spending instability has a significant positive predictive content over real exchange rate instability, which in turn hampers growth both through investment and productivity channels. Also, real exchange rate instability has asymmetric effects on economic growth as the relationship between these two variables is driven by real

exchange rate appreciation. Finally, partial evidence supports the view that real exchange rate appreciation contributes to the decline of sectors with important positive externalities, thereby leading to persistent productivity losses and weak economic growth. Overall, we interpret the above findings as suggesting that the stability of public spending and real exchange rate are keys to Africa's long-term economic growth.

Having said that, the question arises as to how to achieve those objectives. Avoiding large swings in public spending requires having some control over government revenue sources, both internal and external. In many African countries, with a narrow production basis, domestic revenues are closely synchronized with developments in commodity markets. The long-term solution for government revenue and expenditure instability is to broaden the revenue base through economic diversification. However, achieving a stability of government domestic revenues in the short-run may be facilitated by the adoption of the use of contingent financial instruments and some institutional arrangements, such as the establishment of a stabilisation fund. The use of contingent financial instruments, such as futures, swaps, and options, has the potential to transfer commodity price instability to international markets and guarantee more stable public revenue and expenditure. However, the use of such instruments critically depends on the existence of a sophisticated domestic financial sector, which does not exist in many African countries. Contrary to the contingent financial tools, stabilisation seems to be a feasible solution[34]. The stabilisation fund serves as a buffer mechanism whereby some part of windfall revenues are transferred from the budget to the stabilisation fund during

[34] Transparency and fiscal restraint are just as important in ensuring the well-functioning of a stabilisation fund.

times of increasing commodity prices and the other way round when prices are declining, ensuring therefore the stability of public spending. The other source of uncertainty for government revenue is the flows of resources coming from abroad and financing government deficit. Most African countries rely on aid flows in that respect, which means a more predictable aid, could also be beneficial. Having a more stable public spending could take care of an important source of real exchange rate instability.

In a context of renewed interest on the nexus between poverty and economic policies, it might be interesting to use again the dependent economy framework to explore this issue. And, this will be the objective of Chapter II.

APPENDIX I-1: VARIABLES AND SOURCES

VARIABLES	*SOURCES*
Dependant	
$Ln(GDP_{it})$	Natural Logarithm of per capita GDP (1996 international prices) Source: Penn Word Table Version 6.1
Explanatory	
$Ln(GDP_{it-1})$	Lagged of Natural Logarithm of per capita GDP Source: Penn Word Table Version 6.1
Ln(Investment Rate)	Natural Logarithm of real investment as ratio to GDP (1996 international prices) Source: Penn Word Table Version 6.1
$Ln(n_{i,t}+g+d)$	Natural Logarithm of population annual growth rate plus 0.05 Source: World Development Indicators 2004
Ln(Primary)	Natural Logarithm of primary enrolment ratio Source: World Development Indicators 2004
Ln(Secondary)	Natural Logarithm of secondary enrolment ratio Source: World Development Indicators 2004
Ln(REER)	Natural Logarithm of Real Effective Exchange Rate. The real effective exchange rate is the ratio of prices in the rest of the world adjusted for variations in nominal effective exchange rate to price in the country. The weighting scheme used in the calculation of prices in the rest of the world and nominal effective exchange rate is based on the shares of the country's exports to the main five largest trade partners. An increase means a depreciation while a decrease means an appreciation. Source: Calculated based on data from International Financial Statistics (2004), World Development Indicators (2004) and COMTRADE (2004).
Ln(Instability of GC Ratio)	Natural Logarithm of the instability of general government final consumption expenditure as ratio GDP Source: World Development Indicators 2004
Ln(Instabilityof GOVEXP Ratio)	Natural Logarithm of the instability of government total expenditure as ratio to GDP Source: World Development Indicators 2004

APPENDIX I-2: SAMPLE

Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Republic of Congo, Cote-d'Ivoire, Djibouti, Eritrea, Ethiopia, Gabon, the Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

APPENDIX I-3 STRUCTURAL, INSTITUTIONAL, AND POLICY FACTORS DETERMINING GROWTH

Easterly and Levine (2002) provide a comprehensive and succinct account of the debate on policy versus structural and institutional determinants of economic growth. They highlight three main hypotheses, which are the geography/endowment, the institution, and the policy arguments.

Geography/endowment

The geography/endowment hypothesis asserts that environment exerts a significant influence on the quality and quantity of production factors such as labour and land and therefore contributes to determining the level of output and income. Environment also determines technological progress and impacts the pace of economic growth. In particular, locating in the tropics is seen as a handicap to higher labour productivity because of the proliferation of human infectious diseases in this environment (Bloom and Sachs, 1998). Other view holds that tropical climate dampens labour productivity as few fully involve in productive activities when hot and wet (Landes, 1998). Similarly, geographical location determines the quality of land. Bloom and Sachs (1998) and Sachs (2001) attribute the poorness of Africa's soil to ecological factors inherent to the location in the tropics. Finally, environment could also drive technological development as well as efficiency. Diamond (1997) indicates that germs and crops influence the technical progress of societies in the long-term. He argues that people living in Europe developed some resistance to certain diseases they contracted from their farm animals. More importantly, the use of draft animals helps Eurasia to gain a technological lead over other continents, say Africa, where tsetse flies severely limit the expansion of cattle. Other particular geographical circumstances such as landlockness could constraint the accessibility of producers to large economic market, limit economies of scale gains, and therefore lead to meagre production efficiency (Sachs and Warner, 1998; 1997).

Institutions

The institution argument asserts that environment shapes institutions which, in turn, influence policies and therefore economic development path. Easterly and Levine (2002) identify

three aspects of environment, namely the location in the tropics, the proliferation of germs, and the type of crops grown, as some of the factors that determine the nature and the quality of institutions. The argument on "tropics" holds that countries that are located in the tropics are likely to develop poor institutions while those that are remote from the tropics tend to display relatively sound institutions (Hall and Jones, 1999). This argument is based on the assumption that Western Europeans have a historical lead over others in terms of good institutions. This implies that other regions where Western Europeans settle, meaning regions with similar climate, are likely to have relatively sound institutions.

European settlement and their historical advance in terms of the quality of institutions are also at the heart of the argument based on "germs". Acemoglu et al. (2001) relate current institutions in developing countries to the past colonisation strategies of Europeans. They argue that Europeans were very much inclined to settle in countries where mortality among potential settlers is low. Europeans settlers develop institutions similar to those of their home country. These institutions largely promote property rights and establish checks and balances mechanisms, and Australia, New Zealand, Canada and the United States are some cases in point. In contrary when environment is hostile, with a proliferation of germs and high mortality, European did not settle in large numbers. They instead encouraged the emergence of "extractive institutions", with little regard to property right protection and few institutional safeguards against government abuses. Acemoglu et al. (2001) claimed that this description fits well the situation of African countries. Perhaps more important in their argument is the persistence of institutions that were shaped during the colonisation process. These institutions tend to endure even after independence.

Finally, the argument on "crops" was developed by Sokoloff and Engerman (2000). Although European settlement is central to this argument, the two pillars of the "crops" view are factor endowments and the resulting crops. The comparison of development paths in the Americas provides an interesting case to illustrate this argument. Latin America strong comparative advantage in land and its wide use of slave and indigenous people made producing commodities such as sugar cane, rice, silver efficient. These commodities were produced in a system of large-scale agriculture and mining, which was controlled by a plantation and mining elite, allowing therefore substantial economies of scale. The elite subsequently manage to control power by promoting institutions that restrict political participation and economic opportunities for the majority. These institutions persist even when countries stop specializing in activities that display large economies of scale. Similarly, Isham et al. (2006) show that countries that rely on plantations crops such as sugar display worse institutions compared to countries that specialize in

the production of grains (rice and wheat). Turning to the success of North America countries such as Canada and the United States, Engerman and Sokoloff recall that "these economies[35] were not endowed with substantial populations of natives able to provide labour, nor with climates and soils that gave them a comparative advantage in the production of crops characterized by major economies of using slave labour." These endowments explain the widespread of small family farms that produced grains and the relatively equal income distribution during this period. The development of a middle class went hand-in-hand with the development of institutions that promote economic and social advancement.

Policy View

The policy argument holds that environment-related hindrances are not a fatality and can be largely alleviated by sound microeconomic as well as macroeconomic policies. The aim of promoting good microeconomic policies is to remove price distortions and allow an efficient allocation of goods and factors and substantial productivity gains. Microeconomic policies are often termed as "structural policies". They mainly include trade reforms, which consisted of reduction in protection, and deregulation of markets[36]. Good macroeconomic policies very often defined in terms of economic policy outcomes. They refer, among other things, to low inflation rates, positive real interest rates, competitive real exchange rates, low fiscal and current account deficits, if not surpluses of those balances (Fisher, 1993: Ghura and Hadjimichael, 1996: Catamitsis et al., 1999).

[35] The focus was on North East of the United States and not its southern states
[36] These are some of policies promoted by Bretton Woods Institutions, specially the World Bank.

APPENDIX I-4: PANEL UNIT ROOT TESTS

Suppose that the series follow an AR (1) process:

$$X_{it} = \alpha_i X_{it-1} + M_{it}\phi_i + \varepsilon_{it} \quad (1)$$

Where $i=1, 2, \ldots, N$ represents cross-section units or series and $t=1, 2, \ldots T_i$ captures the period. M_{it} is added to account for possible exogenous variables, such as individual trends or fixed effects. There are two assumptions that can be made about the structure of the unit root. The first assumes that the unit root process is the same across cross-sections, meaning that α_i is the same across individuals or countries ($\alpha_i = \alpha$). In contrast, the second category of tests assumes different unit processes, implying that the unit root process varies across individuals or countries. Levin, Lin, and Chu (2002) test is part of the first category of tests while the Im, Pesaran and Shin (2003) test and the Fisher-type tests using Augmented Dicker-Fuller (ADF) (Maddala and Wu, 1999: Choi, 2001) belong to the latter.

LEVIN, LIN, AND CHU TEST (2002)

The starting point of Levin, Lin and Chu test is the following Augmented Dicker-Fuller (ADF) specification: $X_{it} = \lambda X_{it-1} + \sum_{j=1}^{p_i} \delta_i \Delta X_{it-j} + M'_{it-j}\phi_i + \varepsilon_{it}$ (2)

in which the unit process is common across cross-sections ($\lambda = \alpha - 1$) and the lag order of the difference, p_i, varies among units. The null and alternative hypotheses for the test are the following:

$$H_0 : \lambda = 0 \quad (3)$$
$$H_1 : \lambda \langle 0 \quad (4)$$

Under the null hypothesis, there is a unit root, while under the alternative, there is no unit root. The basic idea behind the Levin, Lin, and Chu Test is to obtain the estimate of λ from proxies for ΔX_{it} and X_{it-1} that are standardised and purged of potential deterministic components and autocorrelations. The test involves four steps.

First, ΔX_{it} and X_{it-1} are regressed both on the lags terms ΔX_{it-j} for $j=1,\ldots,p_i$ and the exogenous variables M_{it}. The estimated parameters from these two regressions are $\left(\hat{\delta},\hat{\phi}\right)$ and $\left(\delta',\phi'\right)$, respectively.

Second, the following series $\Delta\overline{X}_{it}$ and $\overline{X}_{it-1}$ are constructed by getting rid of the autocorrelations and deterministic structures.

$$\Delta\overline{X}_{it} = \Delta X_{it} - \sum_{j=1}^{p_i} \hat{\delta}_{ij} \Delta X_{it-j} - M_{it}' \hat{\phi} \qquad (5)$$

$$\overline{X}_{it-1} = X_{it-1} - \sum_{j=1}^{p_i} \hat{\delta}_{ij} \Delta X_{it-j} - M_{it}' \hat{\phi} \qquad (6)$$

Third, $\Delta\overline{X}_{it}$ and $\overline{X}_{it-1}$ are standardised by dividing them to the regression standard error, s_i.

$$\Delta\tilde{\tilde{X}}_{it} = \Delta\overline{X}_{it} / s_i \qquad (7)$$

$$\tilde{\tilde{X}}_{it-1} = \overline{X}_{it-1} / s_i \qquad (8)$$

with s_i the estimated standard error derived from the each ADF from (2).

Fourth, λ is estimated using the previous findings, especially by running the following regression:

$$\Delta\tilde{\tilde{X}}_{it} = \lambda\tilde{\tilde{X}}_{it-1} + \theta_{it} \qquad (9)$$

Levin, Lin, and Chu demonstrate that under the null, a modified t-statistic for $\hat{\lambda}$ is asymptotically normally distributed

$$t_\lambda^* = \frac{t_\lambda - (NT')S_N \hat{\sigma}^* se(\hat{\lambda})\mu_{m\bar{T}}^*}{\sigma_{m\bar{T}}^*} \rightarrow N(0,1) \qquad (10)$$

t_λ represents the standard t-statistic for $\hat{\lambda} = 0$,

$T^{'} = T - (\sum_i p_i / N) - 1$,

$\hat{\sigma}^*$ is the estimated variance of the error term θ, $se(\hat{\lambda})$ the standard error of $\hat{\lambda}$

S_N captures the mean of the ratios of the long-term standard deviation to the innovation standard deviation for each individual. This measure is obtained through kernel-based techniques.

$\mu_{m\bar{T}}^*$ and $\sigma_{m\bar{T}}^*$ are adjustment terms of the mean and standard deviation.

IM, PESERAN, AND SHIN (2003)

Contrary to the Levin, Lin, and Chu test, Im, Pesaran, and Shin test start with a distinct ADF regression for each unit.

$$X_{it} = \lambda X_{it-1} + \sum_{j=1}^{p_i} \delta_i \Delta X_{it-j} + M_{it-j}^{'} \phi_i + \varepsilon_{it} \quad (2)$$

Under the null,

$H_0 : \lambda_i = 0$, for all i

Whereas under the alternative:

$H_1 : \lambda_i = 0$ for i=1, 2,…, N1

$H_1 : \lambda_i \langle 0$

for i=N_1+1, N_1+2,…,N

Once the separate ADF regressions are estimated, the average of the t-statistics for λ_i from the individual ADF regressions, $t_{iT_I}(p_i)$:

$t_{NT} = \left(\sum_{i=1}^{N} t_{iT_I}(p_i) \right) / N$ is transformed in order to get the desired test statistics.

If the lag order is always equal to zero (p_i=*0* for all i), the simulated critical values for t_{NT} are deducted from Im, Pesaran, and Shin table for different numbers of cross sections *N*, series

lengths *T*, and for all the equations specifications. However, if the lag order of the ADF is non-zero for some units, Im, Pesaran, and Shin (IPS) suggest the use of an adjusted form of t_{NT}. The adjusted form follows an asymptotic normal distribution and takes the following form:

$$W_{t_{NT}} = \frac{\left(\sqrt{N}\left(t_{NT} - N^{-1}\sum_{i=1}^{N} E(t_{iT}(p_i))\right)\right)}{\sqrt{N^{-1}\sum_{i=1}^{N} Var(t_{iT}(p_i))}} \rightarrow N(0,1) \qquad (11)$$

with $E(t_{iT(p_i)})$ and $Var(t_{iT(p_i)})$ representing the expected mean and variance of the ADF regression t-statistics. IPS suggest the values of these expressions for various values of *T* and *p*.

FISHER-ADF

Another approach suggested for panel unit root tests lies on Fischer (1932) methodology. The idea is to build a test that combines the p-values from individual unit root tests (Maddala and Wu, 1999: Choi, 2001).

Assuming that w_i is the p-value of individual unit root for cross-section i, the distribution under the null of unit root for all *N* cross-sections is the following:

$$-2\sum_{i=1}^{N} \log(w_i) \rightarrow \chi^2_{2N} \qquad (12)$$

Moreover, Choi shows that:

$$W = \frac{1}{\sqrt{N_I}} \sum_{I=1}^{n} \phi^{-1}(w_i) \rightarrow N(0,1)$$

with ϕ^{-1} representing the inverse of the standard normal cumulative distribution function.

APPENDIX I-5: INCLUSION OF POLICY FACTORS

Suppose a Cobb-Douglas function that has the following form:

$$Y = K_p^{\alpha} K_h^{\beta} (A.L)^{1-\alpha-\beta} \qquad (1)$$

where Y is the real output; K_p and K_h are the physical and human capital stock, respectively; A captures the factor-augmenting, economy-wide levels of technical progress and efficiency; L is labour.

Assuming also that the expansion of labour and labour-augmenting technology follow the following process:

$$L = L_0 e^{nt} \quad (2)$$

$$A = A_0 e^{(pt + X\phi)} \quad (3)$$

with n representing the exogenous rate of expansion of labour, t the time, g the exogenous rate of technical progress, and X a vector of economic policy variables and other factors that have the potential to impact the level of technology and efficiency of the economy, and ϕ the vector of coefficients associated with the economic policy variables and other growth-enhancing factors.

If the shares of physical and human capital to income are s and h, respectively, and if both depreciate at the same rate d, the accumulation of physical and human capital follows the above rules:

$$\frac{dK_p}{dt} = sY - d \qquad (4)$$

$$\frac{dK_h}{dt} = hY - dK_H \qquad (5)$$

Defining y, k_p and k_h as the stock of physical and human capital in terms of effective labour units, meaning

$$y = Y / A.L \qquad (6)$$

$$k_p = K_P / A.L \qquad (7)$$

$$k_h = K_H / A.L \qquad (8)$$

the production function and the accumulation functions can be expressed in terms of effective labour unit:

$$y = k_p^{\alpha} k_h^{\beta} \qquad (9)$$

$$\frac{dk_p}{dt} = sy - (n + p + d)k_p \quad (10)$$

$$\frac{dk_h}{dt} = hy - (n + p + d)k_h \quad (11)$$

The equilibrium levels of physical and human capital per effective unit at the steady state can be determined by assuming that the levels of these factors are constant in the steady state. This implies setting equations (10) and (11) to zero and solving them. This results into:

$$k_p^* = \left(\frac{s^{1-\beta}h^{\beta}}{n + p + d}\right)^{1/(1-\alpha-\beta)} \quad (12)$$

$$k_h^* = \left(\frac{s^{1-\alpha}h^{\alpha}}{n + p + d}\right)^{1/(1-\alpha-\beta)} \quad (13)$$

Inserting (12) and (13) into (9) leads to:

$$\ln y^* = -\left(\frac{\alpha + \beta}{1 - \alpha - \beta}\right)\ln(n + p + d) + \left(\frac{\alpha}{1 - \alpha - \beta}\right)\ln s + \left(\frac{\beta}{1 - \alpha - \beta}\right)\ln h \quad (14)$$

Expressing (14) in terms of unit of labour rather than effective unit of labour results into the following:

$$\ln\left(\frac{Y}{L}\right) = \ln A_0 + pt + X\phi - \left(\frac{\alpha + \beta}{1 - \alpha - \beta}\right)\ln(n + p + d) + \left(\frac{\alpha}{1 - \alpha - \beta}\right)\ln s + \left(\frac{\beta}{1 - \alpha - \beta}\right)\ln h \quad (15)$$

Mankiw, Romer and Weil (1992) indicate that the transition to steady state implies the following:

$$\frac{d\ln y}{dt} = \gamma(\ln y^* - \ln y) \quad (16)$$

with $\gamma = (n + p + d)(1 - \alpha - \beta)$

From relation (14), one can deduct:

$$\ln y = (1 - e^{\gamma})\ln y^* + e^{\gamma}\ln y_0 \quad (17)$$

where y_0 represents the output per effective unit at time t_o

Adding $-y_o$ to both sides lead to:

$$\ln y - \ln y_0 = (1 - e^{\gamma T})\left\{-\ln y_0 - \left(\frac{\alpha + \beta}{1 - \alpha - \beta}\right)\ln(n + p + d) + \left(\frac{\alpha}{1 - \alpha - \beta}\right)\ln s + \left(\frac{\beta}{1 - \alpha - \beta}\right)\ln h + \ln A_0 + pt + X\theta\right\}$$

(18), with *T* representing the period under consideration.

CHAPTER II:

POVERTY AND REAL EXCHANGE RATE: EVIDENCE FROM PANEL DATA[37]

[37] A condensed version of this chapter is forthcoming in the *Journal of African Development*, September 2006. We would like to thank Jean-Louis Arcand and Jean-Louis Combes and two anonymous referees of the *Journal of African Development* for helpful discussions and pertinent comments on an earlier draft. We would also like to thank Roland Kpodar for sharing his program on Bootstraping and Tsangarides Charambolos for sharing his database.

I- INTRODUCTION

Frequent exogenous shocks, including volatility of terms of trade and resource flows, and capricious weather conditions, have taken a heavy toll on the internal and external balances of many developing countries. As a result, some of these countries have adopted economic policies largely inspired by structural adjustment programs. The theoretical foundations of these policies are rooted in the dependent economy model or "Australian model", in which clearing internal and external imbalances requires an increase of the relative price of tradable to nontradable goods, defined as the depreciation of real exchange rate, and a reduction in domestic absorption. Policies aimed at reducing fiscal deficits and privatising state owned enterprises are therefore supposed to contain domestic absorption while measures gearing toward promoting trade, such as slashing tariffs on exports, are expected to lead to the depreciation of real exchange rate. The analysis of the impact of these economic policies on real incomes, or poverty, has received a special attention in the literature[38].

This chapter investigates the influence of the intermediate indicators of economic policies, namely real exchange rate and absorption, on poverty. This differs from some of the approaches generally used in the literature. Dollar and Kraay (2002), Ghura et al. (2002), for instance, explore the relationship between policy outcome indicators, such as inflation, trade openness, and fiscal deficits, and the incomes of the poor. The idea of reverting to intermediate policy indicators rather than policy outcome indicators has two

[38] Bourguignon et al. (1991) look into the impact of adjustment policies on the distribution of income based on some case studies. They also bring into the analysis issues of trade-off between efficiency and equity as well as political feasibility of such policies.

advantages. First, it makes the model specification less cumbersome as the analysis relies on fewer factors. Second, the method helps in effectively addressing model uncertainty concerns and the parsimonious choice of macroeconomic policy-related variables because the approach is based on a theoretical model. The relationship between the intermediate policy variables and poverty come into play through indirect and direct channels. In line with the vast empirical literature on poverty reduction (Foster and Szekely, 2001: Dollar and Kraay, 2002: Ghura et al., 2002), economic growth is considered as the major indirect channel through which economic policies, real exchange and absorption, public spending in this chapter, influence poverty. In this chapter, direct channels are highlighted as well.

The rest of the chapter proceeds as follows. Section II provides an overview of the nexus between economic policies and poverty in the context of Sub-Saharan Africa, where the challenge of alleviating poverty is of particular importance. Section III presents the dependent economy model. Section IV provides the conceptual background by reviewing the indirect and direct channels through which real exchange rate and public spending affect the incomes of the poor. This analysis will be complemented by a close look at the role of a third set of factors that determine the direct relationship between real exchange rate and poverty. Section V presents the theoretical framework and the econometric methodology. Section VI discusses the choice of variables and data and presents the econometric results. Section VII concludes.

II- OVERVIEW

The World Bank and the International Monetary Fund sponsored structural adjustments programs have often been criticised for their detrimental effects on the poorest segments of the society. Some, like Ali (1998), find successful macroeconomic reforms to be associated with increasing poverty by using IFAD data. On the other hand, others, like Demery and Squire (1996), reject the claim and show that improved macroeconomic environment is largely condusive to poverty reduction.

These two views can be illustrated in table 1, which summarises a study carried out by Christiansen et al. (2002). The information combines macroeconomic policy score and information on poverty headcount[39] and is based on poverty country case studies. It has the advantage of using data that are comparable over time.

[39] Poverty headcount is the share of the national population whose incomes are below the official threshold (or thresholds) set by the national governement.

Table 1: Macroeconomic policies and poverty trend

		Change in macroeconomic score	Change in poverty headcount (%)
Madagascar	1993-97	-0.1	12
	1997-99	0.5	0.0
Mauritania	1987-95	2.4	-65
Nigeria	1985-92	1.8	13
	1992-96	-1.0	89
Uganda	1992-97	0.7	-40
	1997-00	0.3	-16
Zambia	1993-96	1.2	-27
	1996-98	0.0	18
Zimbabwe	1991-96	0.3	25

Source: Christiansen et al. (2002)
Positive value of macroeconomic means an improvement in the macroeconomic policy environment

Table 1 clearly reveals three sorts of dynamics in the relation between macroeconomic reforms and poverty. First, there is a situation in which a country experiences an escalation of poverty despite substantial improvements in macroeconomic policy environment. The unique case that portrays this feature is the situation in Nigeria between 1985 and 1992. Then, there are circumstances in which a country makes no progress in macroeconomic reforms and faces increasing poverty. Finally, there is a case where a country displays both a good track record in implementing macroeconomic reforms and decline in poverty headcount. The latter two cases largely reflect cases presented in table 1, suggesting that sound macroeconomic policies might go hand-in-hand with poverty reduction. However, this apparent relationship may be subject to some criticisms. The link between the soundness of macroeconomic policies and poverty reduction does not automatically imply directional causality. There may be some other factors that account for the relationship between macro-economic stance and poverty. Moreover, economic reform package comes very often with aid package that helps

dampen the effects of negative exogenous shocks. Thus, one acceptable approach is to consider rigorous counterfactual scenarios rather than an ex-ante/ex-post comparison. General equilibrium models generally provide suitable environment for such simulations as shown by Bourguignon et al. (1991). Finally, the extent to which poverty headcount captures poverty and the way the macroeconomic score[40] is built may be questionable[41]. We will present in the next section the dependent economy model, which is the theoretical basis for policies that have been implemented in many developing countries. The model will help find alternative indicators to be considered in the discussion on economic policies and poverty.

III- SIMPLE DEPENDENT ECONOMY MODEL

The failure of traditional economic models, Keynesian and Monetarian models, to capture the reality of the developing world gave a prominent role to the dependent economy model. This model has provided the theoretical background for policies designed to reduce internal and external imbalances in many developing countries.

The dependent economy model was initially developed in the area of international trade theory (Salter, 1959: Swan, 1960) and subsequently found numerous applications in development economics because of its ability to capture dynamics in small open economies, especially developing economies. The model is built on the assumption that the country is price-taker, meaning that the country market power is not significant to

[40] The index is composed of three components: fiscal, monetary and exchange rate policy. The weights of each component are derived from international cross section regressions.
[41] The weighting scheme used to compute the macroeconomic score might sound very arbitrary.

influence world prices. Another salient feature of the model is the distinction made between tradable and nontradable goods. In fact, the price of tradable goods is determined by the world market, the prevailing nominal exchange rate, and trade policy, especially tariffs and export subsidies, while nontradable price depends on domestic effective demand and domestic supply.

The model could be summarised by the following equations:

$$P_T = e * P_T^* * (1+\varpi) \quad (1)$$

$$P = P(P_T, P_N) \quad (2)$$

$$E = \frac{P_T}{P_N} \quad (3)$$

$$ED_N = N_D(E,G) - N_S(E) \quad (4)$$

$$ED_T = T_D(E,G) - T_S(E) \quad (5)$$

$$\frac{\partial ED_N}{\partial E} \rangle 0; \frac{\partial ED_N}{\partial G} > 0; \frac{\partial ED_T}{\partial E} \langle 0; \frac{\partial ED_T}{\partial G} > 0 \quad (6)$$

Equation (1) indicates the determinants of tradable prices, P_T, which are the nominal exchange rate , e, the international price of tradable goods, P_T^*, and the trade policy materialised in the equation by a tariff, ϖ. Equation (2) captures the general level of prices, which is assumed to be a linearly homogenous function of the prices of tradables, P_T, and nontradables, P_N. Equation (3) defines the real exchange rate, E, as the relative price of tradables to the nontradables. Equations (4) and (5) underline excess demand[42] of nontradable and tradable goods, respectively. These equations also carry two

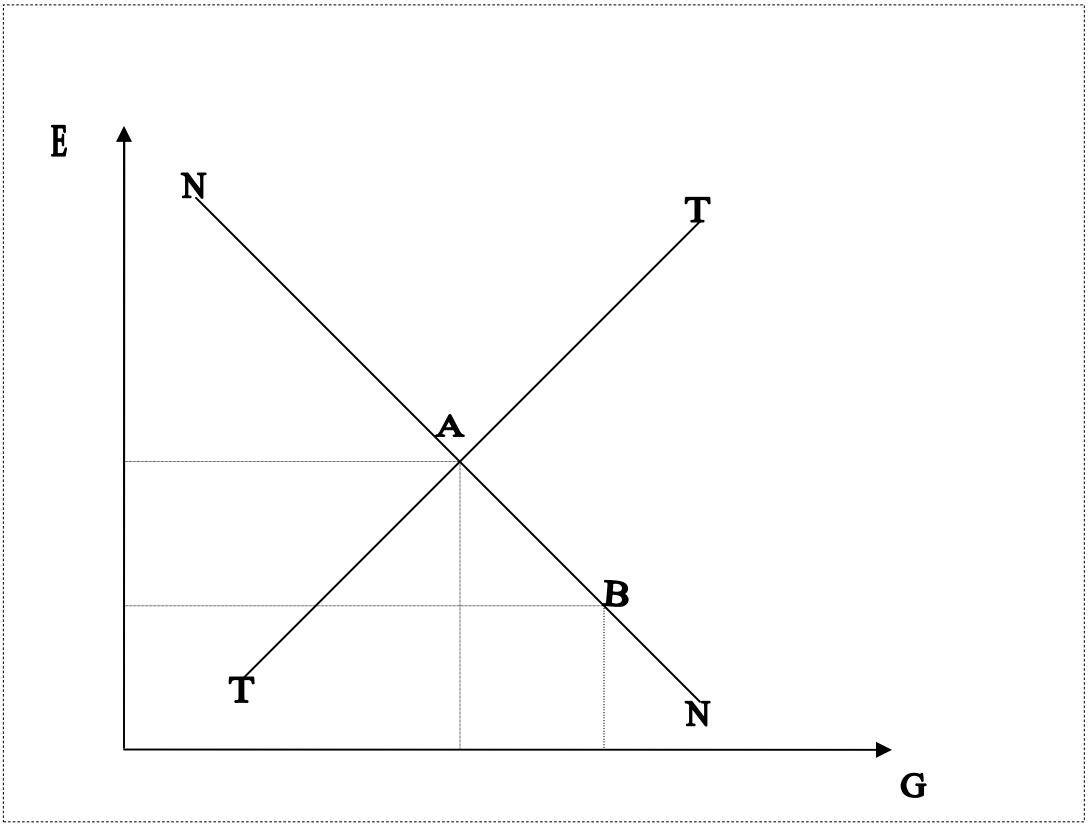
[42] The difference between the demand and supply

public policy variables: the public spending G[43] and the real exchange rate, E. Equation (4) suggests that any appreciation of the real exchange rate results in the decline of the excess demand of nontradables as they become relatively expensive. On the other hand, an increase in public spending leads to higher excess of the demand for nontradables. Equation (5) shows that an appreciation of real exchange rate, both by boosting the demand and restraining the supply of tradables, increases the excess demand of this particular good. The same equation suggests that an increase in government expenditure or an augmentation in absorption widens the excess demand for tradable goods.

Equations (4) and (5) could be used to set the conditions for internal and external equilibriums, which require excess demands for nontradables and tradables to be equal to zero. In the dimension *(E,G)* internal equilibrium is represented by a curve with a negative slope, *(NN).* This reflects the idea that a real exchange appreciation is essential in restoring equilibrium in the nontradable market when public spending increases. In other words, an increase in absorption, which is identical to an increase in public spending, triggers an excess in the demand of nontradables. The relative price of nontradables must go up for this imbalance to be cleared, meaning that the real exchange rate must appreciate. The external equilibrium is captured by an increasing curve *(TT),* suggesting that, if public spending increases, so does the absorption, relative price of tradables must rise in order to eliminate the external imbalance. The simultaneous internal and external equilibriums are achieved in point A.

[43] We ignore the public spending on nontradable goods for simplicity purposes

Figure 1: Dynamics in a dependent economy model



Point B represents a situation wherein there is an external imbalance, say a trade deficit. B can also be described as a situation where the real exchange rate is below its equilibrium level, or overvalued. This is reminiscent of the conditions that prevailed in many African countries after the second oil shock.

One way of clearing this external disequilibrium, moving from B to A, is to reduce absorption and depreciate the relative price of tradables to nontradables. Economic policies are therefore designed to achieve these two goals and usually qualified as sound economic policies. These policies include prudent fiscal, monetary, and exchange rate policies geared towards avoiding real exchange appreciation and excessive

absorption. Clearly, economic policies in the dependent economy model framework tend to primarily impact the real exchange rate and absorption. Consequently, analysing the effects of sound economic policies on poverty amounts to assessing the impact of real exchange rate and absorption on poverty. The chapter identifies direct and indirect channels through which real exchange rate and absorption influence poverty.

IV- REAL EXCHANGE RATE, ABSORPTION, AND POVERTY

4.1 Indirect effects

Economic growth remains one of the key indirect channels through which absorption and real exchange rate affect poverty. In fact, sound macroeconomic policies, reflected in the dependent economy model by appropriate real exchange rate and absorption, are generally considered to be conducive to strong economic growth (Fischer, 1993), and strong economic growth , which is itself believed to yield poverty reduction (Foster and Szekely, 2001: Dollar and Kraay, 2002: Ghura et al., 2002).

4.1.1 Real exchange rate, absorption, and growth

Many growth studies support the contention that misalignments of real exchange rate adversely affect economic performance (Cottani et al., 1990: Ghura and Grennes, 1993). There are two explanations behind this pattern. First, as a relative price of tradable to nontradable goods, real exchange rate determines, to a large extent, the degree of competitiveness of the export sector, a key growth engine in many small developing

countries. Second, an inappropriate real exchange rate gives rise to speculation against the domestic currency. This creates a destabilising effect on domestic financial markets, leading therefore to lower investment and growth.

The relationship between the reduction in absorption and economic growth is rather ambiguous. A case in point is the experience of many developing countries that implemented fiscal adjustment policies. Those countries adopted stringent fiscal measures, including deep cuts in public investment spending and severe cuts in transfers, in order to achieve sustainable fiscal balances. The purpose of such policies is to send a signal to the private sector about governments' commitment and ability to efficiently run their economies and contributes to higher private investment and economic growth. However, some of the measures may seriously undermine economic growth prospects. This is particularly true if the cuts relate to public-sector spending in infrastructural facilities and in the area of human capital, and law and order, which tend to strongly crowd in private investment and therefore highly beneficial to economic growth (Aschauer, 1989: Erenburg, 1993: Serven and Solimano, 1993: Oshikoya, 1994: Serven, 1996).

4.1.2 Growth and poverty

Although there is no fully developed theoretical framework on the relationship between economic growth and poverty, numerous empirical studies provide conclusive evidence about the positive association between income growth and income measures of poverty. Using panel data, Dollar and Kraay (2002) found that a one percent increase of per capita income results in one percent rise of the average incomes of the poorest fifth of

society. Timer (1997), Ghura et al. (2002), Foster and Szekely (2002) applied different approaches to the same data, and found that the incomes of the poorest 20 per cent increase less than proportional with those of the non-poor. The positive impact of economic growth on poverty is also confirmed by various individual country studies (Lipton and Ravallion, 1995: Ravallion and Datt, 1996).

4.2 Direct effects

4.2.1 The direct impact of the reduction of absorption

The reduction of the absorption is often achieved by cutting public spending, namely by freezing the nominal bill wage or/and downsizing the public sector or/and reducing substantially subsidies and other currents transfers. These measures increase directly poverty, particularly in a context where there are few work opportunities for the poor in the private sector.

However, the relationship between absorption, especially public expenditure, and poverty could be also positive for three reasons. First, cuts in public spending may reduce the government tendency to revert to monetary financing as means of funding fiscal deficits, thereby contribute to lowering inflation. The poor may therefore benefit from low inflationary pressures as clearly demonstrated by Easterly and Fischer (2001). Second, a growing body of evidence shows that the structure of public expenditures in social sectors in many developing countries, especially in Africa, tends to favour the

richest at the expense of the poorest (Castro-Leal et al., 1999). For instance, the share of public subsidy to the poorest 20 percent of the population in the health sector varies from 4 percent in Guinea to 17 percent in Tanzania while the share received by the richest 20 percent ranges from 48 percent in Guinea to 17 percent in South Africa. In the education sector, the poorest 20 percent capture only 5 and 14 percent of public spending in education respectively in Guinea and Tanzania whereas the 20 percent richest receive 44 percent and 21 percent of public spending in Guinea and Ghana. In such circumstances, reduction in public spending may have little impact on the poor. Third, this is all the more true if cuts in public expenditures are accompanied by changes affecting the intra and inter allocation of public spending, with more public resources channelled towards social sectors and/or compartments of these sectors extensively used by the poor. For instance, a shift in social spending toward the delivery of basic public services, including basic education and health care that are mostly consumed by the poor, can lead to poverty reduction. Clearly, the direction of the relationship between poverty and absorption is ambiguous.

4.2.2 The direct impact of real exchange rate on poverty

The Stolper-Samuelson (1941) theorem provides a strong foundation for a potential positive impact of real exchange rate depreciation on poverty. In fact, if one assumes that the tradable sector is labour-intensive, as suggested in many studies (Dorosh and Sahn, 2000: Agenor, 2004), and a perfect mobility of labour across sectors, especially between tradable and nontradable sectors, any increase of the relative price of

tradable goods would lead to higher returns for labour: the most abundant factor at the disposal of the poor.

However, real exchange rate depreciation can potentially give rise to offsetting effects that could mitigate partially, or even completely, the benefits the poor get from stronger relative price of tradables. These effects are mainly three. First, higher tradable price, if achieved by nominal depreciation, raises the domestic costs of imported goods and therefore the cost of living of the poor. This negative income effect might seriously dampen the relative price effect if imported goods represent a substantial share in the consumption basket of the poor. Except for the urban poor, this impact tends to be marginal for rural poor, who make up the majority of the poor in most developing countries. Second, when production and resources switch in favour of the tradable sector as a result of real exchange appreciation, the demand for labour and wages in the nontradable sector declines, depressing therefore revenues in that sector. Since most urban poor tend to be nontradable good producers, the consequence will be increasing urban poverty. But, this effect is likely to be mitigated by the reduction in rural poverty if most of the poor live in rural areas. Third, the other offsetting effect comes from the potential contraction impact of a nominal depreciation. A real depreciation gained through a nominal depreciation can lead to higher cost of capital and intermediate inputs, such as oil, that are generally imported in developing countries (Lora and Oliveria, 1998). Real exchange rate depreciation generates therefore a negative supply-side shock that can take a toll on output and employment, both in the tradable and nontradable sectors. As a result poverty may rise. Again, this effect could be very limited in situations where production techniques are highly labour intensive and allow a high degree of substitution

between production factors, namely capital and labour. Such production techniques are likely to reflect those of commodities and some manufacturing goods[44] , the mainstay of many developing countries' exports.

4.1.2.1 Unskilled and skilled labour

The structure of the labour market could be much more complex than what was previously assumed, with the coexistence of skilled and unskilled labour. One can assume that the poor constitute the bulk of unskilled workers because they are more likely than other segments of the society to lack education and marketable skills. In this framework, the outcomes of real exchange depreciation remain again favourable to the poor provided that the two types of labour are mobile and the tradable sector is low-skill-intensive. These results fit well with the experience of some East Asian countries that experienced significant real exchange depreciation and poverty reduction in the 1960s and 1970s. Wood (1994, 1997), for instance, shows that the demand for unskilled labour and wages for this type of labour soared in the Republic of Korea, Taiwan, and Singapore after these countries liberalise their trade and increase the relative price of their tradable goods. Elsewhere, in Latin America particularly, empirical evidence is mixed, with real exchange depreciation leading to an apparent change in the structure of labour demand in favour of skilled workers and higher overall unemployment and poverty in most countries (Berry, 1998: Hanson and Harrison, 1999). The apparent combination of real exchange rate depreciation and rising poverty stirs controversy about the Latin America's

[44] Textiles and apparels are cases in point

comparative advantage. Given the region's impressive endowment in natural resources and its relatively higher human capital endowment compared to other developing regions, Spilimbergo et al. (1999) and Wood (1997) suggest that Latin America's comparative advantage might not be in low-skill-intensive production.

In any event, even by assuming that labour, especially unskilled labour, is the most abundant factor and a perfect mobility of this production factor among sectors, one can suspect the relationship between real exchange rate and the incomes of the poor to be influenced by a third set of factors, which include the quality of institutions and the distribution of productive assets.

4.3 Third set of factors

4.3.1 Inequality

The debate on inequality, growth, and poverty has recently regained momentum. A vast literature tends to point towards a potential deleterious impact of inequality on growth (Persson and Tabellini, 1991: Alesina and Perotti, 1993: Alesina and Rodrik, 1994: Keefer and Knack, 2000)[45]. Similar conclusions are also found on the relationship between inequality and poverty, with inequality leading to the appearance of poverty traps. The issue of access to production factors is widely referred as the key explanation for such relationships.

[45] This view contrasts with the classical approach that suggests that the marginal propensity to save of the rich is higher than that of the poor, meaning that high initial inequality results in higher aggregate savings, capital accumulation and growth (Kaldor, 1957: Bourguignon, 1981).

The access to productive assets is essential in determining the responses to incentives, particularly the increased relative price of tradables to nontradables. In fact, expanding activities in the tradable sector, as a result of a favourable real exchange rate, requires additional capital, which has to be mobilised through credit. But the access to credit, in a context of financial market imperfections, critically depends on collateral, which lenders demand in exchange of any loan they grant. For this reason, only borrowers with reasonable assets are able to respond to price incentives and engage in productive activities. Consequently, only few reap the income opportunities created by adequate real exchange rate when inequality runs high.

Inequality could also determine the direction and the scope of the effects of real exchange rate on poverty through its impact on human capital accumulation. Inequality adversely affects the process of acquiring skills in two ways. First, credit market imperfections and the demand for collateral can constraint not only the access of the poor to capital but also to education, especially if the funding of education depends on loans. Acquisition of skills becomes therefore easy only for a very few when inequality is high. Second, inequality may influence the process of human capital accumulation even if there is no credit constraint. This is the case if the quality of the educational system is a local good (Durlauf, 1994: Fernandez and Rogerson, 1998). In this situation, agents are sorted in groups that are separated according to human capital or wealth status. The segregation can even be reinforced by the establishment of political measures, including zoning restrictions or voluntary contribution to school financing (Deininger and Olinto, 2000). Consequently, disparities in skills widens over time, with the poor likely to be the most affected. Since the level of skills may be one of the determinants as for how agents

effectively take advantage of opportunities, the poor are unlikely to gain the benefits arising from real exchange rate depreciation.

It can therefore be assumed that a fair distribution of wealth plays a positive catalytic role in the relationship between real exchange rate and poverty while a more unequal one dampens the supposedly positive effects of real exchange depreciation on the incomes of the poor.

4.3.2 The quality of institutions

It is broadly agreed that institutions play a critical role in the process of economic development. In particular, institutions that promote economic freedom, ensure a good provision of public goods, and enforce contracts are regarded as determinant in creating an enabling environment for economic activities, thus leading to economic expansion (Rodrik, 1999: Parente and Prescott, 1999: Acemoglu et al., 2001: Acemoglu and Robinson, 2003). Such institutions also determine the effectiveness of the poor's response to any economic incentive, especially to changes in real exchange rate.

The impact of institutions on the relationship between real exchange rate and poverty will be illustrated by three pieces of evidence. First, the lack of access to capital is regarded as one of the constraints facing the poor in their endeavours to boost their incomes. It has been already mentioned in the chapter that access to credit, when capital markets are imperfect, depends upon collateral provided by borrowers. The ownership of that collateral can be severely constrained if property rights are not well defined and

protected. The implication is that the poor can hardly get loans in the absence of a clear definition and protection of property rights. As a result the poor are unlikely to expand their activities in the tradable sector when there is real exchange rate depreciation.

Second, even if property rights are protected, the lack of adequate provision of public goods can dampen the response of the poor to any improvement of the relative price of tradable to nontradable goods. For instance, the quality and density of the road system, namely rural roads, determines to what extent the poor are connected to markets and therefore their ability to exploit growth-promoting opportunities. Consequently, the lower the provision of the public goods is, the weaker is the positive impact of a favourable real exchange rate on poverty.

Third, the enforcement of contracts is also likely to influence the extent to which the poor react to economic incentives created by the change in real exchange rate. The reason for this is that enforcing contract reduces the risk of default between agents and creates a more auspicious environment for investment. In this context, the poor are therefore more likely to gain from new opportunities created by real exchange depreciation.

V-THEORETICAL FRAMEWORK AND THE ECONOMETRIC METHODOLOGY

5.1 Theoretical Framework

Following Dollar and Kraay (2002)'s approach, the relationship between the economic policies and poverty is formulated as follows:

$$P_{i,t} = \delta_0 + \delta_1 Y_{i,t} + \delta_2 E_{i,t} + \delta_3 I_{i,t} * E_{i,t} + \delta_4 G_{i,t} * E_{i,t} + \delta_5 X'_{i,t} + \eta_i + \nu_{i,t} \quad (7)$$

where the i subscripts refers to country and t indexes years. Variable $P_{i,t}$ is supposed to capture poverty. Since there are few observations for alternative indicators of poverty, we revert to the logarithm of per capita income of the poor to measure poverty[46]. $Y_{i,t}$ denotes the logarithm of per-capita income. $I_{i,t}$ represents the quality of institutions, $E_{i,t}$ is the real exchange rate, and $G_{i,t}$ corresponds to the Gini coefficient. $X'_{i,t}$ is a vector of control variables. The error component is decomposed into a time invariant element η_i and a time variant component $\nu_{i,t}$. δ_0 is the constant. δ_1 captures the impact of economic growth on poverty but also reflects the indirect effects of other right-hand-side variables on the incomes of the poor. δ_3 measures the interactive effect of real exchange rate and the quality of institutions while δ_4 captures the interaction between real exchange rate and income inequality. These interactions are key elements in determining the direction and the scope of the effects of economic policies on poverty. δ_3 is expected to be positive, which implies that any combination of real exchange rate depreciation and sounder institutions results into the increase of the incomes of the poor. Conversely, any depreciation of real exchange rate that takes place in the context of weaker institutions is associated with disappointing outcomes for the poor. In line with the theoretical framework, we expect δ_4 to be negative. This means that real exchange depreciation would be beneficial for the poor if there is a fairly equal income distribution. On the other hand, increasing the relative price of tradable to nontradable would not serve the cause of

[46] Alternative poverty indicators are presented in Appendix II.3

poverty alleviation if income distribution is acutely skewed. Finally, the coefficient vector δ_5 also capture potential direct effects that other control variables may have on poverty. These right-hand-side variables include other policy as well as structural variables.

5.2 Econometric Methodology

$$P_{i,t} = \delta_0 + \delta_1 Y_{i,t} + \delta_2 E_{i,t} + \delta_3 I_{i,t} * E_{i,t} + \delta_4 G_{i,t} * E_{i,t} + \delta_5 X'_{i,t} + \eta_i + \nu_{i,t} \quad (7')$$

The first temptation is to use Ordinary Least Squares (OLS) as an estimation approach. This method, in the particular case of this study, has a number of shortcomings. First, some of the right-hand-side variables, especially per capita income, $Y_{i,t}$, are likely to be endogenous. In fact, various studies on income distribution and growth point to a reverse causation from per capita income of the poorest to average income (Barro, 1999: Perotti, 1996). Then, one should not rule out possible omission of explanatory variables that are correlated with other right-hand-side variables of the equation. Moreover, not accounting for unobserved country-specific effects is likely to lead to biased results. Finally, over or under-reporting can be an important problem associated to the poverty measure and other control variables. It is well known that measurement error of the dependent variable does not generate biased coefficients[47] when the error is not correlated with other right-hand-side variables. This seems unlikely to be the case for the poverty measure. For instance, in many developing countries, rural households may be difficult to reach by survey teams, leading to the underestimation of poverty. The same is true in

[47] Even though coefficients are not biased their standard errors are.

situation where education attainment of the population is low or in a context in which income inequality is high. Measurement error in poverty can clearly be influenced by the education attainment of the population, which constitutes some of the regressors of the equation to be estimated. Using OLS in a context of likely combination of omitted explanatory variables, measurement error, and endogeneity of some explanatory variables leads to inconsistent estimates.

Following the procedure developed by Anderson and Hsiao (1982), one possible solution is to revert to the Method of Instrumental Variables (IV), which is a first-differenced [48]version of equation 7':

$$\Delta(P_{i,t}) = \delta_1 \Delta(Y_{i,t}) + \delta_2 E_{i,t} + \delta_3 \Delta(I_{i,t} * E_{i,t}) + \delta_4 \Delta(G_{i,t} * E_{i,t}) + \delta_5 \Delta(X'_{i,t}) + \Delta(\nu_{i,t}) \quad (8)$$

This procedure eliminates not only country-specific effects but also all other time-invariant variables. It also helps control for endogeneity and even address the inconsistency problem associated with measurement errors (Greene, 1998) if the chosen instrumental variables are not correlated with measurement errors. In line with standard arguments on the instrumental variables, the lagged differenced-endogenous variables (or lagged endogenous variables) are used as instruments. But Arellano and Bond (1991) argue that if such procedure is adequate therefore further lagged variables are good instruments as well. On that basis, they develop a Generalised Method of Moments Estimator (GMM), well-known by "first-differenced GMM estimator" that combines the suggested instruments in an efficient way. However, Blundell and Bond (1998) demonstrate that first-differenced GMM have poor finite sample properties, especially

[48] First-differencing may exacerbate measurement error

when lagged levels of the variables are not strongly correlated with subsequent first-differences. Bond et al. (2001) indicate that this is likely the case when the series are close to a random walk or when the variance of the country-specific effects η_i rises relative to the variance of error term ε_{is} .

In order to address the problem associated with persistent panel data, Blundell and Bond(1998) develop a system GMM estimator that is based on a simultaneous system of two equations, which are equations (7') and (8). Lagged variables serve as instruments for the differenced equation (8) while their lagged first-differences are the instruments for the equation in level (7').

The validity of the system GMM as a consistent estimator can be ascertained by showing that the error term is not serially correlated and the instruments used are the adequate ones. The first condition is gauged by Arrelano and Bond (1991) test for autocorrelation, which determines whether the first-differenced error term has a second-order. The second condition is verified by a test of over-identifying restrictions, which could be either the Sargan (1958) test or Hansen (1982) Test.

VI- DATA ISSUES AND ECONOMETRIC RESULTS

6.1 Description of the variables and their sources

The chapter relies to a great extent on Dollar and Kraay's dataset, which was also used in other studies including Ghura et al. (2002). This dataset is complemented by several sources. The World Development Indicators (WDI) (2004) provides data on

government total expenditure, *GE*. Data from International Financial Statistics (IFS) (2004), COMTRADE (2004) and WDI (2004) are used to compute Real Effective Exchange Rate, *REER*. Polity V Database is the source for the indicators of political institutions. The dataset used in this chapter refers to an unbalanced panel of 86 developed and developing countries, including 13 Sub-Saharan African countries, observed from 1962 to 1999.

6.1.1 Poverty

Among the several available measures of the welfare of the poor, the chapter sticks to the one presented in Dollar and Kraay's database, which defines the poor as the poorest 20 per cent of the population. Thus, the empirical investigation uses per capita income of the poorest quintile as dependent variable. This decision is almost driven by data availability concern and criticisms that alternative measures are subject to. In fact, it is extremely difficult to come up with a number of observations for alternative measures of poverty that is equal or higher 248, which is the number of observations available in our dataset. More importantly, Dollar and Kraay (2002) suggest that the use of three other measures of poverty may be misleading. In particular, the recourse to the average incomes below a particular poverty line, as an indicator of poverty, is intricate to interpret especially when the distribution of income is very sharp in the vicinity of the poverty line. In this particular case, any economic growth that is not accompanied with a change in distribution will elevate a substantial share of the population from just below to just above the poverty line and consequently bring about a decline of the income of those

below the poverty line. This outcome completely distorts the exact picture, which is the improvement of the welfare of the poor. Similar apprehensions also hold when using other measures that give higher weight to the poorest of the population.

Dollar and Kraay (2002) indicate that data on the average income of the poorest quintile comes from two sources. The first source, household surveys, is by far the most important reliable one. The second is generated from data on Gini coefficient. This method is applied only for countries that have Gini coefficient data but lack figures on the poorest quintile. The technique consists in extrapolating the income of 20 per cent poorest of the society by assuming that the distribution of income is lognormal (Aitchinson and Brown, 1966: Johnson et al., 1994).

6.1.2 Key explanatory variables of interest

Per capita income: The chapter relies on the real per capita GDP at purchasing power parity available in Dollar and Kraay dataset as indicator for average income. This dataset builds on the Summers-Heston Penn World Tables Version, which is extended forward through 1997.

Real Exchange Rate: As a relative price, the real exchange rate plays a key role in the analysis of dynamics that open economies go through. In the simple model described previously, real exchange rate moves to achieve internal and external balance, i.e., the equilibrium in the supply and demand of nontradable as well as tradable goods. However,

one major problem associated with the concept of real exchange rate is how to align measurement to the theoretical definition.

In practice, there is no price index for tradable and nontradables as such. Instead, there are only few aggregate price indexes, which include the consumer price index (CPI), the wholesale price index (WPI) and the producer price index (PPI), and some price deflators, among other things, the personal expenditure (PCE) deflator, the Implicit Deflator of GDP. Most of these indicators are difficult to find in many countries or cannot be compared from one country to another. For these reasons, the majority of economists turn to the *CPI*, which is the most readily available indicator. In so doing, the real exchange rate is understood as real effective exchange rate, which is defined as the product of nominal exchange rate, expressed in units of the domestic currency per unit of the foreign currency, and the ratio of the price level abroad to domestic price. This measurement seems to be different to the theoretical definition of real exchange rate in the chapter, which refers to the relative price of tradable to nontradable goods. In reality, it captures in some way the ratio of tradable price to that of nontradable.

This assertion can be best illustrated by using the following decomposition. Suppose that the aggregate price level, both at home and abroad, comprises tradable and nontradable components:

$$P = \beta P_T + (1-\beta) P_N \qquad (9)$$

$$P^* = \beta^* P_T^* + (1-\beta^*) P_N^* \qquad (10)$$

where P_T denotes the log price of tradable at home, P_N denotes the log price of nontradable at home, and β represents the share of tradable goods in the economy. The

same definitions apply to (10), expect that the * denotes for the foreign country. Let's define now real exchange rate with respect to overall prices, *Z*,

$$Z \equiv -P + e + P^* \qquad (11)$$

where e denotes the log exchange rate defined in units of home currency per unit of foreign. The combination of the three relations leads to the following:

$$Z \equiv (e - P_T + P_T^*) + \beta(P_T - P_N) - \beta^*(P_T^* - P_N^*) \qquad (12)$$

Equation (12) shows therefore that the common measurement of real exchange rate, *Z*, captures three elements: (i) the relative price of tradables, (ii) the relative price of tradables to nontradables in the home country, which by the way is the definition adopted in the dependent economy framework, and (iii) the relative price of tradable to nontradable abroad. It can be noted that, all other things equal, that a change in $P_T - P_N$, brings about a change in Z. So, the measurement of real effective exchange rate may reflect to some extent the theoretical definition of the concept.

Inequality: In the absence of significant number of observations for other indicators of wealth/asset inequality[49], the chapter chooses the data income distribution available in Dollar and Kraay's dataset. This database has four distinct sources. The most important one is the UN-WIDER World Income Inequality Database. The three others come from Deininger and Squire (1996), Chen and Ravallion (2000), and Lundberg and Squire (2000).

[49] We strive to get the Gini's land index of concentration but could not get enough observations to be used in a regression.

Institutions: Recent literature suggests that the quality of institutions matters for economic growth (Acemoglu et al., 2001: Acemoglu and Robinson, 2003). Well functioning institutions refer to an environment where the rule of law is enforced, effective government and civil society entities exist, and policies and legal framework have not been controlled by vested interests. Ideally, ICRG[50] index should have been the appropriate indicator to capture what is understood as institutions in the context of this chapter. Unfortunately, we could not get series for this indicator and finally have to content myself with indicators of political institutions, supplied by Polity V Database and Freedom House. These indictors include Democracy index, *DEMO*, Civil Liberties Index, *ICL*, and Political Rights Index, *IPR*. Higher values of these indexes indicate better institutions. There are theoretical underpinnings behind using political institutions indexes as indicators of good institutions. It has been widely shown in the literature that democratic institutions are likely to be associated with strong legal structure and security of property, which are some of the features emphasized in the definition of institutions (Clague et al., 1997: Gradstein, M. 2005).

Educational attainment: Economic literature has clearly established the importance of human capital as a key determinant of economic growth and poverty reduction. Education attainment, for instance, has been proven to be effective in increasing both productivity and wages in agriculture and informal sector, sectors where most of the poor operate. This chapter uses measures of education status, namely primary and secondary

[50] International Country Risk Guide index is based on underlying numerical evaluations with respect to the expropriation risk, corruption, the rule of law and government repudiation of contracts.

attainments, as indicators of human capital development. The data are extirpated from Dollar and Kraay dataset.

6.1.3 Other regressors

Indicators for government spending: The absorption in the model is captured by public expenditure indicators. We revert to the government total expenditure to GDP ratio, which is retrieved from Word Development Indicators (2004).

Openness: Measuring openness constitutes a tricky exercise as the literature has so often pointed out (Rodriguez and Rodrik, 1999). It is worth noting that one of the widely-used indicators for openness is the ratio of trade (exports, imports, or both) to GDP. However, such measure seems to reflect much more the outcome than the stance of the trade policy, prompting Sachs and Warner to develop an alternative indicator of openness. Their index is composed of five indicators, which capture various policy variables that influence the degree of openness of a country. A country is considered as open if none of the following conditions is met: i) an existence of a socialist economic system, ii) a state monopoly on major exports, iii) an average tariff rates higher or equal to 40 per cent, iv) non tariff barriers covering 40 per cent or more of trade; and iii) a black market premium on exchange rate higher than 20 per cent. Conversely, if one or more of these conditions are fulfilled, the economy is defined as closed. The Sachs and Warner index is therefore a binary variable, implying that an economy could be either open or closed with no possibility to be in-between. This binary representation contrasts verily with the essence

of openness, which itself implies gradual differences between countries an over time. The ideal index should have been a continuous rather than a binary variable. The Sachs and Warner Index is subject to other criticisms. One is the arbitrary choice of the index components and the thresholds associated with them. Another weakness is the nature of components. Rodriguez and Rodrik (1999) point out that only two of the five indicators, namely the tariff and the coverage of quantitative import restrictions, really capture the orientation of trade policy. The other three measures, the classification as a socialist economy, the black market premium on exchange rate, and the state monopoly for major exports, should be considered as purely institutional indicators.

The notion of "observed openness" and "revealed openness" developed by Combes et al. (1999), Guillaumont and Guillaumont (1988), and Guillaumont (1985, 1989, 1994) constitutes an attempt to address some of the shortcomings of using trade to GDP ratio as the indicator for openness. Their core argument is that the magnitude of trade depends on structural factors, such as the size of the country, its natural endowments and location, as well as policies that are pursued. For that reason, actual trade figures, captured by the trade to GDP ratio, reflect partially the degree of openness to trade, therefore are qualified as an indicator of "observed openness". In other words; "observed openness" has two components: one that is driven by the structural determinants of trade and another explained by trade policies. The latter is called "revealed openness" and captures efforts made by countries to open to trade. "Revealed openness" is thus conceived as the difference between "observed openness" and the amount of trade caused by structural factors. Due to some obvious advantages of the "revealed openness" indicator, we revert to a very similar indicator which was built by

Ghura et al. (2002). This indicator was calculated by regressing trade volumes on geographical determinants. Then, the residuals of that regression, *OPENADJAV*, are extracted and considered as reflecting trade policy. Openness to trade indicator is therefore provided by Ghura et al. (2002) dataset.

Agricultural productivity: The agricultural labour productivity, *AGRPRODAV*, is introduced to capture the idea that a stronger growth in agriculture relative to the rest of the economy is beneficial to the poor. Following Dollar and Kraay (2002), the current price share of agriculture in GDP divided by share of workforce in agriculture is used as indicator for agricultural productivity.

6.2 Main Empirical Results

6.2.1 The results of the estimation of the basic model

The first step is to estimate a basic equation, in which the key variable of interest, the real exchange rate, is introduced in addition to per capita GDP and school enrolment as explanatory variables. We also consider two measures for school enrolment, namely primary and secondary enrolments, to make sure that the results are robust. The same approach will be followed in the rest of the empirical investigation.

Table 2: The incomes of the poor and real exchange rate

Dependent variable is the Log average income of the poorest 20 per cent of the population

	SYS-GMM (1)	SYS-GMM (2)
Log Per Capita Income	0.9071***	0.9550***
	(0.0341)	(0.0361)
Log REER	-0.0065	-0.0133
	(0.0148)	(0.0165)
Log PRIMEDAV	0.0690***	
	(0.0172)	
Log SECEDAV		0.0279***
		(0.0074)
Number of Observations	203	203
Number of Countries	57	57
Chi-Square(Hansen over-id test)	0.603	0.61
AR(2) (Test for Serial Autocorrelation)	0.920	0.854
P(H_0: δ_0 =1)	0.223	0.0086
Variables that are instrumented	Log Per Capita Income and Log PRIMEDAV	Log Per Capita Income, Log SECEDAV

Note: Robust standard errors are in parenthesis
*** denotes significance of the estimates at 1 percent critical level
REER, PRIMADAV and SECEDAV stand for Real Effective Exchange Rate, Primary Enrolment and Secondary Enrolment, respectively. Time dummies are included and they turn not to be significant.

Table 2 reports the results on the basic equation. Per capita income, growth in short, and education appear with the theoretically expected signs and are statistically significant. The magnitude of the coefficient on per capita income is 0.907 and 0.955 in specifications (1) and (2), respectively, which is very close to what was found by other studies (Dollar and Kraay, 2002; Ghura et al., 2002). The coefficient on primary enrolment is 0.069 while that on secondary enrolment is 0.028, suggesting that the positive impact of primary education on the incomes of the poor may be stronger than that of secondary education. Overall, these results seem to lend a strong support to the contention that economic growth and human capital development are conducive to poverty alleviation. However, real exchange rate turns surprisingly with a negative sign,

albeit statistically insignificant in all the specifications. The insignificance of real exchange rate may be due to two reasons. First, the channels through which real exchange rate influences poverty might have not been properly captured. More specifically, as indicated in the theoretical framework, the level of inequality and the quality of institutions may determine the extent to which real exchange rate influences poverty. Second, regressions based on the basic equation might have left out other important variables. If those variables happen to be correlated with other right-hand-side variables, the estimates may turn biased. It is therefore important to expand the specification to account for other key factors.

6.2.2 The results of the estimation of the core model

The next move is to estimate the core specification of our model, which includes as main right-hand-side variables average income, a human capital indicator, real exchange rate and the interactions between real exchange rate and the quality of institutions and between real exchange rate and inequality. To check the robustness of the econometric results, we use three measures of political institutions: democratic institutions index, *DEMO*, civil liberties index, *ICL*, and political rights index, *IPR*, in columns (4), (5) and (6), respectively.

Table 3: The incomes of the poor, real exchange rate, institutions, and inequality

Dependent variable is the Log average income of the poorest 20 per cent of the population

	SYS-GMM (4)	SYS-GMM (5)	SYS-GMM (6)
Log Per Capita Income	0.9052***	0.9016***	0.9097***
	(0.0194)	(0.0167)	(0.0172)
Log REER	0.0469***	0.0520***	0.0443***
	(0.0110)	(0.0096)	(0.0079)
Log REER*DEMO	-0.00004		
	(0.0001)		
Log REER*ICL		0.0001	
		(0.0004)	
Log REER*IPR			0.00041
			(0.0003)
Log REER*GINI	-0.1119***	-0.1231***	-0.1163***
	(0.0100)	(0.0107)	(0.0082)
Log PRIMADAV	0.0260***	0.0264***	0.0273***
	(0.0094)	(0.0077)	(0.0061)
Number of Observations	203	172	172
Number of Countries	57	56	56
Chi-Square(Hansen over-id test)	0.995	0.956	0.931
AR(2) (Test for Serial Autocorrelation)	0.751	0.315	0.345
P(H_0: δ_0=1)	0.00	0.00	0.00
Variables that are instrumented	Log Per Capita Income and Log PRIMEDAV, DEMO, and GINI	Log Per Capita Income and Log PRIMEDAV, ICL,and GINI	Log Per Capita Income and Log PRIMEDAV, IPR and GINI

Note: Robust standard errors are in parenthesis
*** denotes significance of the estimates at 1 percent critical level
DEMO, ICL, IPR, REER and PRIMEDAV stand for Democracy, Civil Liberties , Political Rights, Real Effective Exchange Rate and Primary Enrolment, respectively.
Time dummies are included and they turn not to be significant.

Table 3 presents the results, in which primary education is used as a proxy for human capital accumulation. Except the interaction between real exchange rate and institutions, all the other right-hand-side variables have explanatory power on the incomes of the poor and enter the regressions with the theoretically expected signs. Indeed, average income is positively and significantly correlated with the incomes of the poor. The coefficient on real exchange rate becomes statistically significant and displays

a positive sign, which indicates that real depreciation in exchange rate is potentially beneficial to the poor. More importantly, the interaction between real exchange rate and the Gini coefficient turns to be significantly negative, meaning that inequality has the potential to reduce the positive contribution of real exchange rate depreciation to poverty alleviation. However, the interaction between real exchange rate and all the indicators measuring institutions turns not to exert a statistically significant influence on poverty. This finding does not necessary imply that the quality of institutions does not matter. It could suggest that measures based on political institutions might not be entirely appropriate in gauging the quality of institutions. In line with previous findings, we find primary enrolment to have a positive and significant effect on the incomes of the poor.

Table 4: The incomes of the poor, real exchange rate, institutions, and inequality

Dependent variable is the Log average income of the poorest 20 per cent of the population

	SYS-GMM (7)	SYS-GMM (8)	SYS-GMM (9)
Log Per Capita Income	0.9106***	0.8994***	0.9116***
	(0.0176)	(0.0199)	(0.0154)
Log REER	0.0504***	0.0583***	0.0501***
	(0.0097)	(0.0098)	(0.0079)
Log REER*DEMO	0.00001		
	(0.0001)		
Log REER*ICL		0.00005	
		(0.0004)	
Log REER*IPR			0.0002
			(0.0003)
Log REER*GINI	-0.1144***	-0.1212***	-0.1165***
	(0.0104)	(0.0097)	(0.0063)
Log SECEDAV	0.0127***	0.0141***	0.0155***
	(0.0038)	(0.0054)	(0.0057)
Number of Observations	203	172	172
Number of Countries	57	56	56
Chi-Square(Hansen over-id test)	0.933	0.939	0.989
AR(2) (Test for Serial Autocorrelation)	0.655	0.401	0.551
P(H_0: δ_0=1)	0.00	0.00	0.00
Variables that are instrumented	Log Per Capita Income and Log SECEDAV, DEMO, and GINI	Log Per Capita Income and Log SECEDAV, ICL,and GINI	Log Per Capita Income and Log SECEDAV, IPR and GINI

Note: Robust standard errors are in parenthesis
*** denotes significance of the estimates at 1 percent critical level
DEMO, ICL, IPR, REER and SECEDAV stand for Democracy, Civil Liberties , Political Rights, Real Effective Exchange Rate and Secondary Enrolment, respectively.
Time dummies are included and they turn not to be significant.

The previous results are based on primary enrolment. One concern is whether the results hold up when using alternative measures of human capital. We respond to this question by repeating the previous exercise but using secondary rather than primary enrolment as the measure of human capital accumulation. Results are reported in table 4. Those results bear a lot of similarities with those in table 3, with the notable exception

that the coefficient on secondary enrolment is significantly lower than that on primary education. In any event, these results are preliminary because there are some structural and policy variables that have not yet been accounted for.

6.2.3 Additional controls

The second concern that has consistently been raised in the chapter is the issue of omitted variables. We therefore consider in tables 5 and 6 potential controls that might have been left out in our core specification. These controls include trade openness, agricultural productivity, public spending variables, three variables that are frequently used as right-side-variables in the regressions on poverty. Accounting for the labour productivity in agricultural sector, *AGRPRODAV*, is a way to capture the impact of a sectoral distribution of growth on poverty. The poor are likely to live in rural areas and derive their livehood from the agriculture sector. As a result, they stand to benefit more than the rest of the population from a strong performance of that sector. The economic literature is replete with examples of countries where a vibrant productivity in agricultural sector is associated with better outcomes for the poor (Ravallion and Datt, 1996). The idea of considering an indicator of openness in the empirical investigation is justified by the desire to take into account the burning issue of trade liberalization and poverty. Following Ghura et al. (2002), we use as indictor of openness the residuals of trade volumes purged of the geographical determinants, *OPENADJAV*[51]. Both openness and productivity in agriculture appear not to have statistically significant effects on

[51] The trade openness indicator is a residual, which implies that its standard error is biased. We use bootstrap method to obtain an unbaiased estimate of the standard error but the results turn to be roughly identical.

poverty. The purpose of adding an indicator for public spending is to include in the empirical analysis the second main policy variable of the dependent economy model: the absorption. In this regard, the government expenditure to GDP ratio appears to be an ideal candidate.

Results from table 5 and 6 clearly reinforce the previous findings. All additional controls turn to be statistically insignificant, expect in column 10 of table 5 where the coefficient on openness turns to be positive and significant. The lack of a statistically significant effect of openness, agricultural productivity and public spending on the incomes of the poor does not imply that these factors are irrelevant for poverty alleviation. It rather suggests that those factors affect the poorest 20 per cent of the society the same way as they impact the rest of the population. In other terms, it indicates that the main channel through openness, agricultural productivity, and public spending influence the poor is through their impact on the average income or the growth of per - capita income

The coefficient on average income, which is the elasticity of the income of the poorest 20 percent of the population with respect to average income, is statistically significant and appears with the expected sign. Its magnitude varies from 0.9016 to 0.9246 and the test on growth-poverty elasticity indicates that its value is statistically different to 1. The positive and significant coefficient on per capita income confirms various studies findings (Foster and Szekely, 2001: Dollar and Kraay, 2002: Ghura et al., 2002) that fostering economic growth is an important avenue for poverty reduction. Putting this finding in the African context, one could affirm that the lacklustre economic

growth in the continent has been the driving force behind the relatively poor performance of the region in terms of poverty reduction in recent years.

Real exchange rate continues to display a statistically significant impact on poverty. The same is also true for the interaction between real exchange rate and inequality and the human capital development indicator. Both tables 5 and 6 show that the interaction between income distribution, captured through Gini coefficient, and real exchange rate appears with a negative coefficient, with significance obtained at the 1 percent level. Once again, this indicates that a skewed income distribution can undermine the positive impact of an appropriate real exchange rate on the incomes of the poor. The most important change that occurs when including additional controls is that the coefficient on the interaction between real exchange rate and some of institution variables, especially civil liberties and political rights indicators, turns significant and appears with a positive sign. Even though entering the regression with the expected sign, the interaction between real exchange rate and democracy index, *DEMO*, remains statistically insignificant. Overall, the results on institution variables tend to support the claim that the quality of institutions amplifies the positive impact of real exchange rate depreciation on poverty alleviation. Turning to human capital indicators, we again find both secondary and primary enrolments to be positively related to the income of the poorest fifth of the population in all specifications.

Table 5: The incomes of the poor, real exchange rate, institutions, inequality, and other covariates

Dependent variable is the Log average income of the poorest 20 per cent of the population

	SYS-GMM (10)	SYS-GMM (11)	SYS-GMM (12)
Log Per Capita Income	0.9155***	0.9201***	0.9246***
	(0.0308)	(0.0214)	(0.0234)
Log REER	0.0478***	0.0440***	0.0457***
	(0.0114)	(0.0074)	(0.0070)
Log REER*DEMO	0.00002		
	(0.0001)		
Log REER*ICL		0.00086***	
		(0.0003)	
Log REER*IPR			0.0056***
			(0.0002)
Log REER*GINI	-0.1141***	-0.1148***	-0.1121***
	(0.0092)	(0.0079)	(0.0091)
Log PRIMADAV	0.0158**	0.01164	0.0151***
	(0.0062)	(0.0074)	(0.0056)
OPENADJAV	0.0371**	0.0209	0.0200
	(0.0168)	(0.0214)	(0.0170)
AGRPRODAV	-0.0250	-0.0189	-0.0305
	(0.0128)	(0.0126)	(0.0120)
Log GE	0.0008	-0.0013	-0.0054
	(0.0075)	(0.0091)	(0.0079)
Number of Observations	157	148	148
Number of Countries	53	53	53
Chi-Square(Hansen over-id test)	1.00	1.00	1.00
AR(2) (Test for Serial Autocorrelation)	0.395	0.339	0.711
P(H_0: δ_0 =1)	0.008	0.0005	0.002
Variables that are instrumented	Log Per Capita Income and Log PRIMEDAV, DEMO, GINI and GE	Log Per Capita Income and Log PRIMEDAV, ICL, GINI and GE	Log Per Capita Income and Log PRIMEDAV, IPR, GINI and GE

Note: Robust standard errors are in parenthesis
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
DEMO, ICL, IPR, REER and PRIMEDAV, OPENADJAV, AGRPRODAV, GE stand for Democracy, Civil liberties , Political Rights, Real Effective Exchange Rate and Primary Enrolment, the measure of Openness, the Agricultural Relative Productivity and the ratio Government Expenditures to GDP respectively.
Time dummies are included and they turn not to be significant.

Table 6: The incomes of the poor, real exchange rate, institutions, inequality, and other covariates

Dependent variable is the Log average income of the poorest 20 per cent of the population

	SYS-GMM (13)	SYS-GMM (14)	SYS-GMM (15)
Log Per Capita Income	0.9246***	0.9240***	0.9380***
	(0.0215)	(0.0211)	(0.0293)
Log REER	0.0446***	0.0432***	0.0407***
	(0.0095)	(0.0078)	(0.0060)
Log REER*DEMO	0.00004		
	(0.0001)		
Log REER*ICL		0.0006**	
		(0.0003)	
Log REER*IPR			0.0004***
			(0.001)
Log REER*GINI	-0.1141***	-0.1124***	-0.1106***
	(0.0156)	(0.0098)	(0.0072)
Log SECEDAV	0.0099*	0.0118**	0.0144***
	(0.0056)	(0.0048)	(0.0039)
OPENADJAV	0.0348	0.0188	-0.0056
	(0.0309)	(0.0241)	(0.0200)
AGRPRODAV	-0.0178	-0.0086	-0.0222
	(0.0122)	(0.0127)	(0.0142)
Log GE	0.0030	-0.0013	-0.0039
	(0.0057)	(0.0073)	(0.0148)
Number of Observations	157	148	148
Number of Countries	53	53	53
Chi-Square(Hansen over-id test)	1.00	1.00	1.00
AR(2) (Test for Serial Autocorrelation)	0.342	0.703	0.792
P(H_0: δ_0 =1)	0.001	0.001	0.039
Variables that are instrumented	Log Per Capita Income and Log SECEDAV, DEMO, GINI and GE	Log Per Capita Income and Log SECEDAV, ICL, GINI and GE	Log Per Capita Income and Log SECEDAV, IPR, GINI and GE

Note: Robust standard errors are in parenthesis
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
* denotes significance of the estimates at 10 percent critical level
DEMO, ICL, IPR, REER and SECEDAV, OPENADJAV, AGRPRODAV, GE stand for Democracy, Civil liberties , Political Rights, Real Effective Exchange Rate and Secondary Enrolment, the measure of Openness, the Agricultural Relative Productivity and the ratio Government Expenditures to GDP respectively.
Time dummies are included and they turn not to be significant.

6.2.4 Asymmetric effects

One of the concerns about the results in tables 5 and 6 is whether the real exchange-poverty correlation is either driven by episodes of real exchange rate depreciation and decline in poverty or episodes of real exchange appreciation and increasing poverty. We address this concern by extending the analysis so as to account for potential asymmetric effects of real exchange rate on poverty. Following Agénor (2002), we introduce two dummy variables. The first is labelled *PASY* and is equal to 1 times *REER* when there is depreciation in real exchange rate and 0 otherwise. The second is called *NASY*, which gets the value 1 times *REER* when there is real appreciation in exchange rate and 0 otherwise.

Table 7: The incomes of the poor and real exchange rate asymmetric effects

Dependent variable is the Log average income of the poorest 20 per cent of the population

	SYS-GMM (16)	SYS-GMM (17)	SYS-GMM (18)
Log Per Capita Income	1.0092***	1.0062***	1.0014***
	(0.0216)	(0.0203)	(0.0288)
Log REER*DEMO	-0.00003		
	(0.0001)		
Log REER*ICL		0.00065**	
		(0.003)	
Log REER*IPR			0.00047
			(0.0003)
Log REER*GINI	-0.1085***	-0.1100***	-0.1050***
	(0.0095)	(0.0101)	(0.0144)
Log PRIMEDAV	0.0046	0.0067	0.0062
	(0.0073)	(0.0108)	(0.0140)
OPENADJAV	0.0270	0.0044	0.0123
	(0.0257)	(0.0186)	(0.0144)
AGRPRODAV	-0.0097	-0.0044	-0.0216
	(0.0191)	(0.0186)	(0.0186)
Log GE	-0.0054	-0.0071	-0.0046
	(0.0108)	(0.0174)	(0.0117)
NASY	0.00038***	0.00035***	0.00036***
	(0.00008)	(0.00009)	(0.00006)
PASY	0.00036***	0.00035***	0.00038***
	(0.00009)	(0.0001)	(0.00006)
Number of Observations	122	116	116
Number of Countries	44	44	44
Chi-Square(Hansen over-id test)	1.00	0.99	1.00
AR(2) (Test for Serial Autocorrelation)	0.537	0.281	0.281
P(H_0: δ_0 =1)	0.672	0.761	0.960
P[H_0: Coef(NASY)=Coef(PASY)]	0.777	0.941	0.340
Variables that are instrumented	Log Per Capita Income and Log PRIMEDAV, DEMO, GINI and GE	Log Per Capita Income and Log PRIMEDAV, ICL, GINI and GE	Log Per Capita Income and Log PRIMEDAV, IPR, GINI and GE

Note: Robust standard errors are in parenthesis
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 1 percent critical level
DEMO, ICL, IPR, REER and PRIMEDAV, OPENADJAV, AGRPRODAV, GE stand for Democracy, Civil liberties , Political Rights, Real Effective Exchange Rate and Primary Enrolment, the measure of Openness, the Agricultural Relative Productivity and the ratio Government Expenditures to GDP respectively. NASY is equal to 1 times REER when there is an appreciation in REER, 0 otherwise. PASY is equal to 1 times REER when there is depreciation in REER, 0 otherwise.
Time dummies are included and they turn not to be significant.

Table 8: The incomes of the poor and real exchange rate asymmetric effects

Dependent variable is the Log average income of the poorest 20 per cent of the population

	SYS-GMM (19)	SYS-GMM (20)	SYS-GMM (21)
Log Per Capita Income	1.0121***	1.0038***	1.0085***
	(0.0118)	(0.0147)	(0.0247)
Log REER*DEMO	-0.00004		
	(0.00013)		
Log REER*ICL		0.0004	
		(0.0003)	
Log REER*IPR			0.0005
			(0.0002)
Log REER*GINI	-0.1057***	-0.1088***	-0.1059***
	(0.0125)	(0.0085)	(0.0111)
Log SECEDAV	0.0045	0.0081*	0.0081
	(0.0117)	(0.0041)	(0.0075)
OPENADJAV	0.0165	0.0025	-0.0063
	(0.0394)	(0.0215)	(0.0196)
AGRPRODAV	-0.0136	-0.0035	-0.0137
	(0.0585)	(0.0210)	(0.0158)
Log GE	-0.0061	-0.0042	-0.0084
	(0.0167)	(0.0088)	(0.1273)
NASY	0.00036***	0.00035***	0.00036***
	(0.0001)	(0.00008)	(0.00007)
PASY	0.00035***	0.00035***	0.00036***
	(0.0001)	(0.0001)	(0.00007)
Number of Observations	122	116	116
Number of Countries	44	44	44
Chi-Square(Hansen over-id test)	0.99	0.99	1.00
AR(2) (Test for Serial Autocorrelation)	0.55	0.40	0.88
P(H_0: δ_0=1)	0.31	0.79	0.73
P[H_0: Coef(NASY)=Coef(PASY)]	0.828	0.975	0.814
Variables that are instrumented	Log Per Capita Income and Log SECEDAV, DEMO, GINI and GE	Log Per Capita Income and Log SECEDAV, ICL, GINI and GE	Log Per Capita Income and Log SECEDAV, IPR, GINI and GE

Note: Robust standard errors are in parenthesis
*** denotes significance of the estimates at 1 percent critical level
DEMO, ICL, IPR, REER and SECEDAV, OPENADJAV, AGRPRODAV, GE stand for Democracy, Civil liberties , Political Rights, Real Effective Exchange Rate and Secondary Enrolment, the measure of Openness, the Agricultural Relative Productivity and the ratio Government Expenditures to GDP respectively. NASY is equal to 1 times REER when there is an appreciation in REER, 0 otherwise. PASY is equal to 1 times REER when there is depreciation in REER, 0 otherwise.
Time dummies are included and they turn not to be significant.

Table 7 reports the results wherein primary enrolment is used as the measure of human capital development whereas Table 8 contains the results of estimates that revert to secondary enrolment as the measure of education. The results in both tables tilt towards the same conclusions. The more important one is that the coefficients on *PASY* and *NASY* are significant and statistically indistinguishable, which implies that there is no asymmetric effect of real exchange rate on the incomes of the poor. As far as the other explanatory variables are concerned, results largely confirm previous findings. Especially, per capita income, or economic growth, continues to be strongly correlated with poverty as suggested by significant higher poverty-growth elasticity, which in both tables is not statistically different to 1. The coefficient on the interaction between inequality and real exchange rate also remains statistically significant while those on openness, agricultural productivity and government expenditure are insignificant at conventional significance levels.

VII- CONCLUSION

Facing both external and internal imbalances, several developing countries have implemented some economic reforms over the past two decades. The dependent economy model shows that these policies have two pillars: the reduction of absorption, obtained to a large degree through fiscal adjustment, and the depreciation of real exchange rate. The approach used in this chapter consists in assessing the impact of economic policies on poverty through these two instruments, with more emphasis on real exchange rate.

The main point in the theoretical framework is that the depreciation of real exchange rate is conducive to poverty reduction provided that there are good institutions and a fairly equal distribution of income. The empirical investigation strongly supports the view that high inequality, proxied by income distribution, impedes the potential positive effect of real exchange rate depreciation on poverty. It also largely backs the contention that the potential positive impact of real exchange rate depreciation on the poor is much stronger when institutions are sound.

Some additional controls are added in the analysis to account for other factors that might have been missed in the analysis. Education appears to be critical for poverty reduction. On the other hand, trade openness, agricultural productivity and public spending are found not to be statistically associated with the incomes of the poor. The lack of significant coefficients associated with these variables does not mean a complete absence of relationships between these indicators and poverty but rather indicates that trade openness, agricultural productivity and public spending come into play indirectly because of their potential impact on economic growth.

Overall, the main policy implication of our findings is that real exchange depreciation could be a powerful tool for poverty reduction if complemented by other policies. Those policies include facilitating the access of the poor to production factors and improving the quality of institutions.

The improvement of institutions, especially political, may have an important bearing on the design of economic policies. In view of the major political reforms that took place in many African countries, it will be worth exploring the implications of such

changes on economic policy stances in the continent. This is, in part, what Chapter III is going to pursue.

APPENDIX II-1: SOURCES AND COMMENTS

Variables	*Sources*	*Comments (if any)*
Average Incomes in lowest quintile	Dollar & Kraay (2002)	
Per Capita Income	Dollar & Kraay (2002)	
REER	International Financial Statistics (2004), World Development Indicators (2004) and COMTRADE (2004)	Natural Logarithm of Real Effective Exchange Rate. The real effective exchange rate is the ratio of prices in the rest of the world adjusted for variations in nominal effective exchange rate to price in the country. The weighting scheme used in the calculation of prices in the rest of the world and nominal effective exchange rate is based on the shares of the country's exports to the main five largest trade partners. An increase means depreciation while a decrease means an appreciation. Source: Calculated based on data from International Financial Statistics (2004), World Development Indicators (2004) and COMTRADE (2004).
PRIMAV	Dollar & Kraay (2002)	
SECEDAV	Dollar & Kraay (2002)	
DEMO	Polity V Database	Polity2 was transformed into DEMO by adding 10. DEMO becomes strictly positive.
ICL	Freedom House (2005)	Civil Liberties Index (CL) was transformed into an increasing function (ICL) by adding 7 to the product of -1 times CL
IPR	Freedom House(2005)	Political Rights Index (PR) was transformed into an increasing function (IPR) by adding 7 to the product of -1 times PR
OPENDJAV	Ghura, Leite, and Tsangarides's Database (2002)	
AGRODAV	Dollar & Kraay (2002)	Labour productivity in agricultural sector relative to economy wide labour productivity
GE	World Development Indicators 2004	

APPENDIX II-2: SAMPLES

SUB-SAHARAN AFRICA
Côte d'Ivoire, Ethiopia, Ghana, Lesotho, Mali, Mauritania, Madagascar, Nigeria, Sierra Leone, Tanzania, Seychelles, and Zambia.

OTHER REGIONS
Algeria, Australia, Belgium, Bangladesh, Bulgaria, Bahamas, Belarus, Bolivia, Brazil, Canada, Chilli, China, Colombia, Costa Rica, Germany, Denmark, Dominican Republic, Ecuador, Egypt, Spain, Estonia, Finland, Fiji, France, Great Britain, Greece, Guatemala, Guyana, Hong Kong, Honduras, Indonesia, India, Ireland, Italy, Jamaica, Japan, Korea, Sri Lanka, Luxembourg, Morocco, Moldova, Mexico, Mauritius, Malaysia, Netherlands, Norway, Nepal, New Zealand, Pakistan, Panama, Peru, Philippines, Poland, Puerto Rico, Portugal, Romania, Russia, Singapore, Slovakia, Sweden, Thailand, Tonga, Tunisia, Turkey, Taiwan, Tanzania, United States, Venezuela, and Yemen.

APPENDIX II-3 : DEFINITION ET INDICATEURS DE PAUVRETE

La pauvreté est l'état dans lequel le bien-être d'une personne ou d'un groupe de personnes est en deçà du niveau perçu comme étant le minimum raisonnable selon les critères d'une société donnée (Ravallion, 1995). Cette définition soulève trois questions. La première porte sur la façon dont on évalue le « bien-être » ou précisément les concepts ou les approches qui permettent de saisir le « bien-être ». La seconde a trait à l'identification du seuil à partir duquel une personne est considérée comme étant pauvre. La troisième concerne la façon dont il faut synthétiser les informations en un indicateur agrégé de pauvreté. La première question soulevée relève de l'identification des approches permettant de capter le bien-être, et sera traitée dans la première section de cette annexe. Les deux dernières questions touchent à l'élaboration des indicateurs de pauvreté et seront analysées dans la deuxième section.

I. APPROCHES

De nombreuses méthodes conceptuelles existent pour mesurer le bien-être d'un individu. Ces méthodes diffèrent non seulement selon le nombre de facteurs retenus pour évaluer le bien-être mais aussi selon l'importance qu'attache l'analyste à la manière dont l'individu juge lui-même son bien-être.

1.1 Approche matérielle et non-matérielle

Certaines méthodes ne captent que le côté matériel autrement dit « le bien-être économique », et ainsi définissent la pauvreté comme étant la rareté de ressources et de biens (Bey, 1999), entravant la satisfaction de besoins essentiels comme la nutrition, l'habillement, et le logement. Cette définition met en lumière deux aspects importants de la pauvreté « matérielle », à savoir le faible revenu et la non-satisfaction des nécessités de base. La prise en compte de la deuxième dimension, c'est-à-dire les besoins fondamentaux, répond aux interrogations soulevées sur la pertinence de l'approche en termes de revenu dans l'évaluation de la pauvreté. Au nombre

des limites d'une telle approche figurent la difficulté à évaluer les revenus non-monétaires (autoconsommation en particulier) dans les pays pauvres, la difficulté à mesurer les flux d'entraide, et la non-prise en compte des externalités générées par l'Etat, à travers la fourniture de biens publics, et les industries, par le truchement de leurs effets sur l'environnement. Bref, les approches fondées exclusivement sur le revenu n'accordent pas d'importance aux biens qui ne passent pas par le marché et qui ont un impact sur le niveau de vie des individus, et contribuent ainsi à biaiser vers le haut ou le bas le niveau de pauvreté. Pour cette raison, elles sont complétées par d'autres concepts qui mettent en exergue la satisfaction de nécessités de base.

Les besoins fondamentaux recouvrent non seulement ce qui est requis à un ménage au titre de sa consommation individuelle (alimentation, logement, habillement) mais également ce dont la collectivité ne peut se passer (approvisionnement en eau potable, services d'éducation, de santé et d'hygiène) (Destremau et Salama, 2002). Ces besoins fondamentaux ont la particularité d'être considérés comme universels et identiques, c'est-à-dire indépendants des cultures et civilisations, du temps et de l'espace. Cependant, ils constituent des besoins physiques et psychiques qui peuvent être satisfaits selon des modalités économiques extrêmement variées. Une autre particularité des besoins fondamentaux est qu'elle possède deux attributs. Le premier est qu'ils peuvent être quantifiables ou mesurables. Le second attribut est que leur satisfaction est productive en ce qu'elle rehausse le niveau de productivité des hommes.

L'approche des besoins fondamentaux tire ses fondements d'une vision humaniste qui va au-delà de l'économie et qui met l'accent sur la morale et le développement de l'Homme sur tous les angles. Elle a connu un grand écho à partir des années 1950. Pour des fins descriptives et normatives, l'approche se ramena à celle de minimum vital. Certains comme François Perroux (1952) parlait de « coûts de l'homme » qui englobent la nourriture, la santé, et l'éducation. L'approche des besoins fondamentaux attira davantage l'attention de la communauté internationale à partir de la moitié des années 1970 avec la Conférence mondiale tripartite sur l'emploi, la répartition du revenu, le progrès social, et la division internationale du travail. Suite à cette conférence, elle devient l'épine dorsale d'un nouveau type de stratégies pour la promotion du développement dans le Tiers Monde.

La rareté de ressources et d'actifs compromet la possibilité de se couvrir contre le risque, donc le concept de pauvreté recouvre également la notion de vulnérabilité face aux chocs. La notion de vulnérabilité a la même signification que celle exposée par Guillaumont et Combes (2000), à savoir le risque pour les pauvres d'être défavorablement touchés par des chocs exogènes

sur lesquels ils n'ont pas un contrôle direct. Il est possible de distinguer trois éléments de la vulnérabilité : l'importance du choc, le degré d'exposition aux chocs, et la résilience ou capacité à réagir aux chocs (Combes et Guillaumont, 2002 ; Guillaumont, 1999).

Dercon (2001) analyse la relation entre pauvreté et vulnérabilité, et propose un schéma conceptuel distinguant trois niveaux de risques. Le premier niveau de risques survient lorsque les ménages dotés d'actifs comme le travail, le capital physique, le capital humain, et le capital social s'engagent dans des activités génératrices de revenus. Ce type de risques peut être lié aux contraintes d'information, et de fonctionnement des marchés et des autres institutions. Le deuxième groupe de risques peut porter directement sur les actifs, entre autres les risques de destruction imputables à l'environnement et aux conflits armés, et à l'érosion du capital humain. Les risques liés aux actifs peuvent, également, découler du non-respect des droits de propriété. Le troisième groupe de risques survient au cours du processus de passage des revenus vers l'accroissement des capacités, et comporte des risques pouvant être liés aux politiques publiques adoptées et à l'accès aux biens publics. En somme, cette typologie de risques montre que la vulnérabilité est une dimension importante dans la dynamique de production et de création de revenus et ainsi de la pauvreté matérielle, mais souligne également qu'elle peut en être la cause. L'adoption de comportements réducteurs de risque peut être la source de moindres revenus et donc limite les possibilités de réduction de la pauvreté.

D'autres, par contre, intègrent dans la définition de la pauvreté d'autres aspects plus abstraits du bien-être, à savoir l'absence ou le manque de potentialités ou de capacités (*capabilities*). Le manque ou l'absence de ces éléments entravent l'acquisition d'un capital physique minimale requis pour s'épanouir dans une société donnée.

Le concept de capacités a été développé par Sen (1985[a]), qui se démarque des approches axées sur les besoins fondamentaux et opte pour une démarche mettant l'accent sur la justice sociale, l'équité, et les inégalités. Aussi, définit-il la pauvreté dans un cadre qui prend en compte non seulement les facteurs économiques mais également les dimensions légales, politiques, et sociales. La base de son analyse sur les capacités part d'une réflexion sur les famines. Celle-ci l'amène à deux conclusions majeures. Premièrement, il rejette la possession de biens matériels, y compris ceux jugés essentiels, comme élément permettant d'apprécier le bien-être des personnes. Deuxièmement, il met en cause les approches agrégées pour cerner la problématique des famines, des inégalités et de la pauvreté.

En effet, Sen démontre que la disponibilité d'un bien à un endroit donné n'est que faiblement corrélée (par l'autoproduction, la création d'emplois, le système des prix et la constitution de réserves publiques) à l'aptitude qu'ont certains groupes d'y avoir accès. Autrement dit, c'est l'incapacité à se procurer les biens et non la pénurie, qui explique les famines. Cette incapacité découle de facteurs légaux, ou semi-légaux, et économiques.

Partant de ce constat, la pauvreté se définirait non pas comme un manque vis-à-vis des besoins fondamentaux en divers biens, mais en termes de défaut de réalisation de certains fonctionnements de base et de l'acquisition des capacités correspondantes. L'approche des capacités est ainsi une approche qualitative qui embrasse à la fois l'avoir matériel mais porte également une grande attention aux valeurs de réalisation et de liberté, les fonctionnements représentant une façon de mener son existence, et les capacités incarnant les diverses opportunités qui se présentent à une personne et parmi lesquelles elle opère un choix. Il découle que ni le revenu, ni l'utilité ne peut capter le bien-être dans l'approche en termes de capacités. La pauvreté ne peut pas être définie par rapport à la faiblesse du revenu et de l'utilité mais plutôt par rapport à l'inadaptation des moyens économiques au regard de l'aptitude des individus à les transformer en capacités de fonctionner, et ceci dans un contexte social, économique et culturel spécifique.

La combinaison de la rareté de ressources et d'opportunités limite le choix des pauvres et leur capacité à être entendu et à contrôler les situations dont dépendent leur sort (*powerless and voiceless*) (Narayan et al., 2000). Donc la pauvreté peut-être synonyme d'exclusion sociale, de détresse psychologique, et de manque de choix et d'action.

1.2. Les approches « utilitariste » et « non utilitariste »

1.2.1 Exposé

L'approche utilitariste fonde les comparaisons du bien-être exclusivement sur les préférences des individus et tire une grande partie de ses fondements théoriques de la théorie microéconomique moderne. Au cœur de l'approche se trouve la notion de *classement des préférences* pour les biens, qui peut être captée par une « fonction d'utilité ». La valeur de cette dernière est supposée résumer le bien-être d'un individu. Les utilités constituent alors la base des préférences sociales, y compris des comparaisons de la pauvreté. Des doutes sont émis quant à la pertinence des jugements personnels de bien-être, et deux raisons sont couramment évoquées. La première est que les individus peuvent être mal informés. La seconde repose sur le phénomène de

« dissonance cognitive » (Akerlof, 1982) dans lequel les choix effectués par l'individu peuvent s'avérer économiquement irrationnels même en présence d'information parfaite.

En supposant qu'il soit possible de comparer les utilités de différents individus (utilités cardinales), des fonctions de bien-être social, qui ne sont que l'agrégation d'utilités individuelles, peuvent être construites. Cependant, le concept de fonction de bien-être social est incompatible avec la théorie purement ordinaliste des préférences en raison entre autres de la non-transitivité des choix sociaux, et ne permet pas ainsi d'établir des comparaisons logiques de pauvreté ou de former tout autre jugement pertinent sur le bien-être social.

En effet, en définissant les préférences sociales à partir des préférences individuelles et en choisissant la règle de la majorité comme étant la base de définition d'une fonction de bien-être social, le Paradoxe de Condorcet nous apprend que le concept de bien-être social ne révèle pas, de façon cohérente, ce qui est préféré socialement. En effet, il est possible qu'une alternative A soit préférée à une alternative B, que B soit préférée à C, mais par contre que C soit préférée à A, violant ainsi le principe de transitivité des choix.

Le Théorème d'Impossibilité d'Arrow, qui est une version générale du paradoxe de Condorcet, élimine la possibilité d'existence d'une fonction de bien-être social. Arrow établit un certain nombre d'hypothèses sur ce que doit être une fonction de bien-être, et démontre qu'il n'existe aucun mécanisme, permettant le passage des préférences individuelles aux préférences sociales et qui ne violerait pas les hypothèses de départ. Une des hypothèses est l'absence de dictature, qui suppose qu'une fonction de bien-être social ne se résume pas à la fonction d'utilité d'une personne. Une autre hypothèse est l'indépendance des choix « *independence of irrelevant alternatives* » qui postule que si une fonction de bien-être social amène à conclure qu'une alternative A est préférée à une alternative B, tout changement de préférences qui n'affecte pas l'ordre de préférence entre A et B établit par les individus ne modifie nullement les préférences sociales pour A et B. Une autre hypothèse établit le principe de transitivité de la fonction de bien-être social, à savoir que si A est préféré à B, et B préféré à C, alors A est préféré à C.

L'approche non utilitariste se distingue par la référence faite à certaines aptitudes élémentaires à satisfaire ses besoins fondamentaux, comme la possibilité de se nourrir et de se vêtir de manière adéquate. Sen (1980, 1985[b], 1987) marque sa préférence pour l'approche non-utilitaire en s'appuyant sur une argumentation différente, abandonnant à la fois l'utilité comme étalon de mesure du bien-être et les formules non utilitaires axées sur les besoins. Sen (1987)

rappelle que « la valeur du niveau de vie a tout à voir avec la vie, non pas avec la possession de biens ». La pauvreté est ainsi perçue comme une privation de la faculté qu'ont les individus à fonctionner. L'analyse de la pauvreté revient pour Sen à cerner ce que sont ces facultés dans des sociétés spécifiques et à identifier les personnes qui ne peuvent pas les acquérir.

Par ailleurs, Sen, tout en admettant la pertinence d'une considération de l'efficacité, propre aux utilitaristes, remet en cause les arguments en faveur d'un maintien des inégalités, et conteste l'idée selon laquelle toute réduction des inégalités est antithétique à l'amélioration de l'efficience d'une économie et au principe de maximisation des utilités.

La critique des modèles non utilitaires tient au fait que l'identification des formes spécifiques de privation de biens ainsi que l'importance qui leur sont accordées relèvent du champ de l'analyste, soulevant ainsi des critiques relatives au caractère arbitraire de l'approche.

1.2.2 Points communs et divergences

La théorie donne rarement des recommandations pratiques quant à la façon de mesurer les niveaux de vie. Aussi, constate-t-on l'usage de nombreuses procédures d'estimation du bien-être par chaque approche. Néanmoins, ce qui semble ressortir des deux approches est le choix porté sur la consommation de biens et services comme facteur déterminant du bien-être.

L'approche utilitaire génère des indicateurs reposant sur les biens et services consommés par un ménage et sur les caractéristiques dudit ménage ; ce qui restreint la notion « d'utilité » au seul « bien-être économique » et amène à ignorer les autres aspects de l'utilité qui ne sont pas quantifiables comme les biens non marchands et les éléments non matériels de la condition humaine comme la liberté. L'indicateur qui découle de l'approche utilitariste est le total des dépenses de consommation en biens et services, normalisé de sorte à prendre en compte les différences de prix et les caractéristiques des ménages. Les approches non utilitaires et celles fondées sur les facultés mettent en avant l'aptitude à se procurer des biens comme élément explicatif du bien-être et retiennent aussi la consommation comme indicateur.

Quoiqu'ayant systématiquement recours aux données sur la consommation, l'usage qui en est faite diffère d'une approche à une autre. Primo, les utilitaristes fondent leur analyse du bien-être sur les dépenses totales tandis que les non-utilitaristes ne s'intéressent qu'à certains types de privation de biens à l'instar du logement, de la nutrition ou de l'habillement. Secundo, dans l'approche utilitaire les méthodes d'agrégation des biens et services consommés sont clairement explicitées. Les prix du marché servent à évaluer les préférences. Par contre les

approches non utilitaires ne donnent aucune indication sur la façon dont il faudrait agréger les principaux déterminants du bien-être. Tierco, des divergences subsistent quant à l'estimation de la valeur des services publics consommés et sur l'importance accordée aux caractéristiques de l'individu qui, rappelons le, peuvent influencer les aptitudes des individus sans pour autant agir sur les préférences.

II-INDICATEURS DE PAUVRETE

Deux catégories d'indicateurs seront présentées, celles reposant sur des mesures monétaires et celles intégrant d'autres dimensions de la pauvreté autres que le revenu.

2.1 Les indicateurs de pauvreté monétaire

Le processus de construction d'indicateurs de pauvreté monétaire exige qu'on réponde à trois questions : la première a trait au choix du type de données, la seconde porte sur le choix de l'unité de référence et de la façon dont on tient compte de son hétérogénéité, et la troisième est relative au seuil qui permet de définir qui est pauvre et qui ne l'est pas.

2.1.1 L'unité d'observation et l'ajustement pour les économies d'échelle

Les enquêtes budget-consommation prennent généralement le ménage comme unité de référence et d'analyse. Ce dernier n'ayant pas toujours la même composition, il y a lieu de prendre en compte la dimension taille du ménage dans la mesure du bien-être matériel. En effet, une personne qui vit dans un ménage de cinq personnes ayant une consommation totale de 10 000 CFA par mois est manifestement moins nantie qu'une personne issue d'un ménage d'un individu enregistrant une consommation totale de 10 000 CFA. Une façon d'intégrer la dimension taille dans l'analyse peut consister à raisonner en termes de consommation par tête, ce qui peut paraître simpliste pour deux raisons. Premièrement, certains types de biens peuvent être consommés par tout le ménage d'où l'existence d'économies d'échelle. Deuxièmement, l'âge influe sur le niveau de la consommation. On peut s'attendre à ce que la consommation d'un adolescent soit moins importante que celle d'un adulte en activité. La notion d'échelle équivalente est généralement utilisée et permet de capter tant la structure d'âge que la taille du ménage. La notion d'échelle

équivalente se mesure à travers deux méthodes : une dite de deux paramètres et l'autre dit d'un seul paramètre. Elles se formulent de la façon suivante :

Echelle équivalente = $(\text{adultes} + \alpha * \text{enfants})^{\theta}$

Echelle équivalente = $(\text{Taille du ménage})^{\theta}$

Par enfants, on entend le nombre de personnes âgées de moins de 15 ans ; α et θ sont des paramètres tels que : $0 \leq \alpha \leq 1$ et $0 \leq \theta \leq 1$; θ capte les économies d'échelle , plus il est élevé plus les économies d'échelle sont importantes ; α saisit le poids de la consommation des enfants.

Cependant, il n'existe aucune technique d'estimation consensuelle de θ : l'ampleur des économies d'échelle (Deaton, Paxon 1996, Deaton 1997). De nombreuses méthodes sont utilisées, chacune ayant des limites. Les méthodes utilisées diffèrent selon les pays, posant du coup un problème de comparabilité.

2.1.2 Choix du type de données

La mesure monétaire de la pauvreté requiert des données sur le revenu ou sur les dépenses. La seconde alternative est préférée à la première pour trois raisons: i) pour des raisons liées aux chocs intermittents, les revenus des ménages, dans bon nombre de pays en développement, subissent une évolution erratique qui peut ne pas refléter rigoureusement celle de la richesse des ménages; par contre la consommation fluctue moins en raison du fait qu'elle est lissée dans le temps; ii) l'épargne est perçue comme une consommation différée et par conséquent affecte les niveaux de bien-être ; iii) les données sur la consommation sont plus fiables que celles sur le revenu parce que les ménages les divulguent plus facilement. En effet, les ménages ont tendance à sous-estimer le niveau de leurs revenus par volonté d'échapper à la fiscalité ou pour des raisons culturelles.

2.1.3 Seuils de pauvreté

Définir une personne comme étant pauvre suppose l'existence d'un repère, qui peut être un seuil ou un indice, sur lequel repose le classement. Les seuils sont formulés le plus souvent dans l'espace de la consommation, et deux concepts reviennent souvent : la notion de « pauvreté relative » et celle de « pauvreté absolue ». Ravallion (1995) définit le seuil de pauvreté absolue

comme étant « le seuil constant en termes de niveaux de vie, et unique sur l'ensemble du domaine dans lequel les comparaisons de la pauvreté sont effectuées ». Un seuil de pauvreté relative, par contre, consiste à choisir une fraction donnée des dépenses moyennes par habitant ou par ménage comme repère.

La détermination du seuil de pauvreté absolue commence par la détermination du panier de biens permettant d'obtenir l'énergie nutritive requise pour survivre. Cependant, force est de reconnaître qu'il existe plusieurs paniers d'aliments pouvant assurer l'énergie nutritive recherchée. L'efficience voudrait qu'on choisisse la combinaison d'aliments qui minimise le coût du nombre de calories nécessaires à la survie, à des prix donnés, et qui répond aux habitudes alimentaires d'une population donnée. Dès que ces biens sont identifiés, on leur trouve une équivalence monétaire en utilisant un système de prix qui reflète la structure du panier de consommation. Le montant ainsi trouvé est appelé *la ligne d'indigence* qu'on peut élargir au ménage en appliquant des coefficients de réduction pour les membres de la famille au-delà ou en deçà d'un certain âge. On parlera de pauvreté extrême pour qualifier les personnes (ou les ménages) ayant des revenus en dessous de la ligne d'indigence.

Cependant, la relation entre la consommation d'énergie nutritive et des dépenses de consommation diffère d'un secteur à un autre, d'une période à une autre, et d'une région à une autre. Cette relation peut être tributaire des goûts, des prix relatifs, de l'existence de biens publics, et de la richesse. Par exemple, les ménages les plus nantis auront tendance à acheter des calories plus onéreuses. Pour toutes ces raisons, la méthode décrite ci-dessus dite de l'énergie nutritive génère des seuils de pauvreté différents selon les sous-groupes, et ne permet pas ainsi d'établir un profil de pauvreté cohérent.

Le passage de la ligne d'indigence à la ligne de pauvreté nécessite la prise en compte des dépenses de logement, d'habillement et de transport qui se fait en appliquant à la ligne d'indigence un multiplicateur dit d'Engel. Afin de faciliter des comparaisons internationales, la ligne de pauvreté est convertie en utilisant des taux de change en termes de parité de pouvoir d'achat (PPA). Ceux-ci sont préférés aux taux de change du marché parce que prenant en compte les différences de prix relatifs entre pays. Le seuil couramment retenu comme seuil de pauvreté absolue est celle de la Banque Mondiale qui se base sur le critère 1$ ou 2$ (PPA) par jour et par personne. Il est très souvent utilisé à des fins de comparaisons internationales de pauvreté.

Indépendamment de leurs besoins absolus, les ménages peuvent se sentir pauvres lorsque leur niveau de vie est en dessous de celui des autres membres de la société. La notion de pauvreté relative capte, dès lors, cette situation. La ligne de pauvreté relative définit la pauvreté par rapport

au niveau national. Ravallion (1995) la définit comme « une proportion donnée de la moyenne arithmétique ou de la médiane de la distribution de la consommation ou du revenu ».

2.2 Exemples d'indicateurs de pauvreté monétaire

Il convient de rappeler que l'analyse de la pauvreté dans une société donnée s'opère à deux niveaux ; au niveau individuel où l'on s'attèle à déterminer le degré de pauvreté d'un individu ou d'un ménage, et au niveau agrégé où il s'agit de capter l'étendue de la pauvreté et le profil de la pauvreté.

Soit $y(z, y_i)$ une mesure du degré de pauvreté d'un individu ou d'un ménage dans lequel z et y_i représentent respectivement le seuil de pauvreté et le revenu d'un individu ou d'un ménage. On suppose, également, que la fonction $y(z, y_i)$ est croissante en y_i et décroissante en z.

L'additivité est une propriété nécessaire pour passer de l'indice individuel à l'indice agrégé. En termes d'analyse, cette propriété permet de conclure que la pauvreté globale s'accentue quand la pauvreté augmente au sein d'une couche de la population, toutes choses étant égales par ailleurs. La classe d'indices additifs au niveau global se présente comme suit :

$$P(z) = \frac{1}{n}\sum_{i=1}^{q} \xi(z, y_i)$$

En choisissant $\xi(z, y_i) = (1 - \frac{y_i}{z})^{\alpha} (\alpha \geq 0)$

On obtient la classe des indices de Foster, Greer et Thornbecke (FGT) qui se définit comme suit :

$$P_{\alpha} = \frac{1}{n}\sum_{n=1}^{q} (1 - \frac{y_i}{z})^{\alpha}$$

où le paramètre α mesure l'aversion pour l'inégalité entre les pauvres. Plus la valeur α est élevée, plus l'indice global accorde de poids au sort des plus pauvres. Il convient d'ajouter que $\xi(z, y_i)$ est égal à zéro pour les non-pauvres et à 1 pour les démunis ($(y_i > z)$). Autrement dit lorsque y_i varie de 0 à z, l'indice de pauvreté varie de 1 à 0. Par conséquent, la classe FGT d'indices de pauvreté s'interprète comme la moyenne de $\xi(z, y_i)$ sur l'ensemble de la

population. Par ailleurs, $\xi(z, y_i)$ et $P(z)$ sont tous deux homogènes de degré 0 par rapport à y_i et z .

Indice numérique de pauvreté (H)

Lorsque α=0, on obtient l'indice suivant :

$$P_0 = \frac{q}{n} = F(z) = H$$

P_0 est la proportion des pauvres dans la population ; autrement dit le rapport du nombre de pauvres (ou de ménages pauvres), *q*, sur le nombre d'habitants (ou de foyers) *n* ; *q* est l'effectif de la population dont la consommation (ou toute autre mesure appropriée du niveau de vie) est inférieure à *z*, le seuil de pauvreté.

L'indice essuie, cependant, deux critiques majeures. Premièrement, l'indicateur ne donne qu'une mesure indirecte de la pauvreté puisque les nécessités de base peuvent être satisfaites partiellement par l'état dans des situations où le revenu monétaire des couches les plus démunies baisse. Deuxièmement, l'indice ne tient nullement compte de la portée ou de l'étendue de la pauvreté. En effet, la baisse du niveau de vie d'un pauvre n'engendre pas la hausse de *H*, et le transfert de revenu d'un pauvre vers une personne plus nantie ne se traduit pas nécessairement par une augmentation de *H*. Pour corriger ces deux dernières limites, recours est fait à l'écart de pauvreté qui prend en compte des différences d'intensité de la pauvreté.

L'écart de pauvreté

Lorsque le paramètre α prend la valeur 1, on a :

$$P_1 = \frac{1}{n}\sum_{i=1}^{q}(1-\frac{y_i}{z}) = \frac{q}{n} - \frac{1}{nz}\sum_{i=1}^{q} y_i$$

$$P_1 = \frac{q}{n} - \frac{q\gamma_s}{nz} = H(1-\frac{\gamma_s}{z})$$ où γ_s est le revenu moyen des pauvres.

L'indice P_1 mesure *l'écart de pauvreté*. Il tient compte non seulement du nombre de pauvres, mais aussi de l'étendue de la pauvreté. A partir de la seconde transformation, l'on peut

noter que P_1 serait nul si H=0 (en l'absence de pauvres) ou si $\gamma_s = z$. Dans le deuxième scénario, le revenu total des pauvres est équivalent à *qz,* puisque, par définition, le revenu total des pauvres est égal à $q\gamma_s$. Or, on remarque qu'en multipliant l'indice P_1 par *nz,* on obtient :

$$nzP_1 = q[z - \mu_s]$$

Cette expression révèle que pour éliminer la pauvreté, il faudrait que chaque individu ou ménage ait un revenu au moins égal à *z.* Le revenu total pour l'ensemble de la société serait alors au moins égal à *nz*. En supposant qu'il n'y ait pas de ressources externes disponibles, le résultat peut être obtenu en transférant nzP_1 des non-pauvres aux pauvres. Ceci suppose également que le processus peut être parfaitement ciblé et qu'il n'y pas d'effets d'incitations négatives associées aux transferts. Dans ces conditions, nzP_1 représente un plancher des engagements financiers nécessaires pour éliminer la pauvreté.

Cependant, l'inconvénient de l'écart de pauvreté tient au fait qu'il n'est pas sensible aux différences d'intensité de la pauvreté entre les pauvres. L'indicateur d'intensité de Foster-Greer-Thorbecke et celui de Sen permettent de remédier à cet inconvénient.

L'indicateur d'intensité de Foster-Greer-Thorbecke (FGT)

En supposant $\alpha = 2$ on obtient $P_2 = \sum_{i=1}^{q} (1 - y_i / z)^2 / n$

A la suite de Ravallion (1992), P_2 peut être écrit de la façon suivante :

$P_2 = \frac{P_1^2}{P_0} + \frac{(P_0 - P_1)^2}{P_0} CV_P{}^2$ avec CV_P représentant le coefficient de variation des revenus des pauvres.

Cet indicateur encore noté H_2 mesure l'intensité de pauvreté. Il comporte deux éléments, le premier capte la contribution de l'écart de pauvreté et le second tient compte de l'inégalité parmi les pauvres.

L'inconvénient de l'indicateur d'intensité de Foster-Greer-Thorbecke réside dans le fait qu'il est difficile à interpréter. En effet, une valeur de P_2, pris comme tel, donne peu d'indication

sur le niveau d'intensité de pauvreté ; elle n'a de valeur que lorsqu'elle est comparée dans le temps et dans l'espace.

L'Indicateur d'intensité de Sen (P^s)

En supposant que z représente le seuil de pauvreté, μ_p le niveau de vie moyen des pauvres, G^P l'indice de Gini des pauvres, q le nombre de pauvres, et P_0 l'indice numérique de pauvreté, Sen formule son indicateur de la façon suivante :

$$P^S = P_0\left[I - k(1-I)G^P\right] \quad \text{avec } k = \frac{q}{q+1} \text{ et } I = 1 - \frac{\mu_P}{z}$$

Lorsque q est très grand, l'expression $\frac{q}{q+1}$ converge vers 1. Dans ce cas de figure, Sen (1997) montre que son indicateur prend la forme suivante :

$$P^S = P_0\left[I - (1-I)G^P\right] = P_0\left(1 - \frac{\mu_p\left[1-G_p\right]}{z}\right)$$

Cette reformulation se rapproche de celle de l'écart de pauvreté, P_1. La seule différence entre les deux est que l'indicateur de Sen prend en compte la distribution du revenu parmi les pauvres, à travers l'expression $1 - G_P$. Dans des situations où il n'y a pas d'inégalité entre les pauvres, l'indicateur d'intensité de Sen est équivalent à l'écart de pauvreté.

2.3 Les indicateurs d'inégalité

Les indicateurs présentés jusque là donnent des indications sur le niveau et l'intensité de la pauvreté sans pour autant éclairer sur la distribution de revenus. Cette dernière est utile en ce qu'elle permet d'apprécier la marge de manœuvre dont dispose les décideurs publics au cas où ils opteraient pour une politique rédistributive comme moyen de lutte contre la pauvreté. Quatre

indicateurs sont couramment utilisés : l'indicateur d'inégalité d'Atkinson, le ratio des percentiles, le coefficient de Gini et des indices de Theil.

Indicateur d'inégalité d'Atkinson

Le débat entre inégalité, efficience, et équité est au cœur de la construction de l'indicateur d'inégalité d'Atkinson. L'indicateur d'inégalité d'Atkinson permet d'estimer le pourcentage du revenu total (ou par tête) qu'on pourrait économiser tout en gardant intact le niveau de bien-être social.

L'indicateur d'inégalité d'Atkinson tire son fondement de concept de *l'équivalent d'un revenu également réparti*. Atkinson (1970) part d'une fonction d'utilité croissante et concave ayant pour formule :

$U(y)=\frac{y^{1-\alpha}}{1-\alpha}$ avec y représentant le revenu, $\alpha \geq 0$, $\alpha \neq 1$; $U^{'}(y)=\frac{1}{y^{\alpha}}$; $U^{''}(y)=\frac{-\alpha}{y^{1+\alpha}}$

Il trouve que l'indicateur du degré d'aversion pour l'inégalité est équivalent à l'élasticité de l'utilité marginale du revenu par rapport au revenu, et s'écrit comme suit :

$$\phi_u(y)=\frac{-xU^{''}(y)}{U^{'}(y)}=\alpha$$

Le choix de la forme de la fonction d'utilité garantit que l'indicateur d'aversion pour l'inégalité ne dépend pas du revenu.

L'équivalent d'un revenu également réparti, y_e , s'obtient en posant

$$U(y_e)=\frac{y_e^{1-\alpha}}{1-\alpha}=\int_0^z U(y)f(y)dy=\int_0^z \frac{y^{1-\alpha}}{1-\alpha}f(y)dy \ ; \ \alpha \neq 1$$

d'où l'on déduit $y_e=\left[\int_0^z y^{1-\alpha}f(y)dy\right]^{\frac{1}{1-\alpha}}$; $\alpha \neq 1$

En optant pour une forme discrète $y_e = \left[\frac{1}{n}\sum_i y_i^{1-\alpha}\right]^{\frac{1}{1-\alpha}}$; $\alpha \neq 1$

Le coût social moyen de l'inégalité se présente comme suit : $c_e = \theta - y_e$ avec θ représentant le revenu moyen. L'indicateur d'inégalité d'Atkinson est construit à partir du coût social moyen de l'inégalité, soit

$$A(\alpha) = \frac{c_e}{\theta} = 1 - \frac{y_e}{\theta} = 1 - \left[\int_0^z \left(\frac{y}{\theta}\right)^{1-\alpha} f(y)dy\right]^{\frac{1}{1-\alpha}} \; ; \; \alpha \neq 1$$

Dans le cas d'une variable discrète, l'indicateur prend la forme suivante :

$$A(\alpha) = 1 - \left[\frac{1}{n}\sum_i \left(\frac{y_i}{\theta}\right)^{1-\alpha}\right]^{\frac{1}{1-\alpha}} \; ; \; \alpha \neq 1$$

Il s'interprète comme le pourcentage du revenu total (ou par tête) que l'on pourrait mettre de côté en donnant y_e à chacun sans toutefois modifier le bien-être social. A titre d'exemple, une valeur de l'indicateur d'inégalité d'Atkinson égal à 32 pour cent signifie que l'on pourrait distribuer 68 pour cent du revenu et atteindre le même niveau de bien-être social que celui généré par la répartition initiale. Par ailleurs, il est également possible de décomposer additivement l'indicateur d'inégalité d'Atkinson, suivant un profil de la population concernée, en inégalité entre groupes et en inégalité au sein de chaque groupe.

Ratio des percentiles

Le ratio des percentiles est parmi les indicateurs d'inégalité les plus faciles à interpréter. Le plus usité est le ratio 90/10, qui est le rapport de la consommation du 90ème percentile sur celle du 10ème percentile. Un ratio de 3 voudrait dire que le plus pauvre parmi les 10 pour cent les plus riches de la population consomme 3 fois plus que le plus riche parmi les 10 pour cent les plus pauvres de la société. Il est même possible d'opérer une décomposition à des fins d'analyse plus poussées ; le ratio 90/10 peut être décomposé en ratio de 90/50 et en ratio de 50/10, et permet ainsi de savoir si l'inégalité provient de la partie inférieure ou supérieure de la distribution. Cependant, ce ratio ne donne aucune indication sur l'ampleur de l'inégalité entre le 11ème et le

89ème percentile. Une façon de pallier ce problème consiste à utiliser les coefficients de Gini et les indices de Theil.

Coefficient de Gini

Il s'obtient en faisant le rapport entre l'aire de concentration des revenus (comprise entre la diagonale du carré et la courbe de distribution des revenus) et la moitié de la surface de ce carré (défini d'un côté par le pourcentage cumulé du revenu et de l'autre par le pourcentage cumulé de la population). Le coefficient de Gini s'interprète de la façon suivante : plus la valeur du coefficient se rapproche de 1, plus les inégalités de revenus sont importantes ; et plus elle tend vers 0, plus la répartition des revenus devient égalitaire. Sa formule se présente comme suit :

$$G = \frac{2}{\mu n^2} \sum_{i=1}^{n} \left(r_i - \frac{n+1}{2} \right) y_i$$

i étant l'individu ou le ménage, y_i son revenu, *n* est le nombre total d'individus ou de ménages, r_i désigne le rang du ménage ou de l'individu en termes de revenu, le rang de celui ayant le plus faible revenu est 1 tandis que celui qui dispose du revenu le plus élevé aura un rang égal à *n*. μ représente le revenu moyen.

L'inconvénient du coefficient de Gini réside dans le fait que deux courbes de répartition de revenus différents peuvent générer un coefficient de Gini identique, rendant du coup difficile l'interprétation. De plus, le coefficient de Gini s'avère être plus sensible aux inégalités qui tiennent leur origine de la partie moyenne de la distribution. Recours est donc fait aux indices de Theil afin de contourner cette dernière limite.

Les indices de Theil

Les deux indices de Theil appartiennent à la classe des Entropies Généralisées (*Generalised Entropy*), dont les indicateurs ont les propriétés requises pour toute comparaison cohérente de distributions. La première propriété est *le principe de transfert de Pigou-Dalton,* qui garantit que tout transfert de revenu d'une personne pauvre vers une personne plus nantie s'accompagne d'un accroissement ou du maintien du niveau d'inégalité, la réciproque étant également vraie. La seconde propriété ou *indépendance du revenu d'échelle* implique que tout

changement proportionnel de tous les revenus laisse les indicateurs d'inégalité inchangés. La troisième propriété ou *principe de population* voudrait que la fusion de deux populations de distribution identiques donne une population ayant la même distribution. La quatrième propriété se réfère à la *symétrie* et garantit l'indépendance d'une distribution (inégalité) vis-à-vis des caractéristiques des individus autres que leur revenu. Enfin, la cinquième propriété, à savoir *la décomposabilité*, permet de décomposer l'inégalité et d'estimer, par exemple, les contributions des différents sous-groupes.

Les deux indices de Theil les plus utilisés se formulent de la façon suivante :

$$E(0) = \frac{1}{n}\sum_{i=1}^{n} \ln\left(\frac{\mu}{y_i}\right) = \ln\left(\frac{1}{n}\sum_{i=1}^{n} y_i\right) - \frac{1}{n}\sum_{i=1}^{n} \ln(y_i)$$

$$E(1) = \frac{1}{n}\sum_{i=1}^{n} \frac{y_i}{\mu} \ln\left(\frac{y_i}{\mu}\right)$$

Le premier est *Theil mean log deviation* index et le second est appelé *Theil entropy index.* Les deux indices mesurent l'égalité parfaite lorsqu'elles prennent la valeur 0. Par contre, en situation d'inégalité parfaite, le premier tend vers l'infini tandis que le second prend la valeur $n\ln(n)$. En termes de sensibilité, le premier capte mieux une inégalité provenant de la queue inférieure de la distribution tandis que le second est plus pertinent lorsque l'origine de l'inégalité se situe au niveau de la queue supérieure de la distribution.

L'indice de Theil permet d'analyser l'évolution des inégalités entre deux déciles caractérisés par leur revenu moyen. Il a surtout l'avantage d'être décomposable et permet d'identifier les facteurs qui expliquent la pauvreté ; qu'il s'agisse de l'éducation, de l'âge, de la catégorie socioprofessionnelle. Partant de là, l'approche duale consisterait à estimer la probabilité d'être pauvre au regard de certaines caractéristiques des ménages ou des personnes. Un exemple serait de déterminer la probabilité d'être pauvre sachant que le ménage a complété les études primaires.

2.4 Les indicateurs captant les conditions de vie

Pour pallier les insuffisances des indicateurs décrites ci-dessous, le PNUD a construit un certain nombre d'indicateurs qui reposent sur le critère de revenu. Ces indicateurs intègrent diverses dimensions de la pauvreté et partent d'une théorisation de la production/reproduction de la pauvreté qui prennent en compte tous les contours de la vie économique, sociale et politique des pauvres, ainsi que les questions identitaires, de statut et de représentations. Cependant, l'élaboration des indicateurs de développement humain pose de nombreux problèmes méthodologiques. Ces problèmes tiennent tant à la multiplicité des dimensions qu'à la difficulté de les quantifier[52].

Construit à partir de 1990, l'indice du développement humain (IDH) mesure les progrès accomplis en matière d'accès aux besoins de base. A partir de 1995 ont été ajouté à la liste deux indicateurs, à savoir l'indicateur sexospécifique du développement humain (ISDH) et l'indicateur de participation féminine (IPF), qui prennent en compte la dimension genre dans la mesure du développement humain. Enfin, l'indicateur de pauvreté humaine (IPH) remplace, depuis 1997, l'indice de pénurie des capacités (ICP), créé un an plutôt. Contrairement à l'indice de développement, axé uniquement sur les besoins de base, l'IPH essaie de capter les autres formes de privation, entre autres l'accès problématique aux ressources publiques et privées. Tous ces indicateurs se basent sur le principe du développement humain.

Le concept du développement humain

Le concept de développement humain fut son apparition à l'occasion de la publication du premier rapport sur le développement humain en 1990. Cet évènement intervenait dans un contexte où les programmes d'ajustement structurels et de stabilisation macroéconomique mises en place dans bon nombre de pays n'avaient pas abouti au résultat escompté, à savoir le retour de la croissance économique. Pis, les réformes portant sur le secteur public, le taux de change, le commerce, et la politique de prix des produits agricoles ont largement occulté la dimension humaine du développent. Partant de ce constat, les rapports sur le développement humain se proposent d'aider à recentrer le concept de développement autour de l'homme ; autrement dit que le développement soit conçu comme « étant celui de l'homme » (PNUD,1991).

[52] La plupart des dimensions sont, par nature, qualitatives.

Le développement humain, tel que définit par le PNUD, est le processus qui consiste à élargir les choix des individus et le niveau de leur bien-être, et ce en augmentant leurs capabilités (*capabilities*). Trois capabilités sont considérées comme fondamentales au développement humain : celle garantissant une vie longue et saine, celle permettant d'accéder au stock de savoir accumulé, et celle facilitant l'accès suffisant aux ressources indispensables à une vie descente. L'élargissement de ces facultés doit être équitable, productive, soutenable et doit s'effectuer dans des conditions garantissant la participation de tous les acteurs. Le développement humain consisterait ainsi à accroître les capabilités des personnes à mener une vie descente à travers l'accroissement des revenus et l'amélioration des autres composantes du niveau de vie entre autres l'espérance de vie, la santé, l'éducation, le savoir et le contrôle de son propre destin (Anand et Sen, 1994 ; Griffin et Knight, 1989).

Le concept de développement humain englobe tant les aspects matériels que non-matériels. Ces derniers incluent la liberté dans le choix du travail et du mode de vie, l'accès à un environnement physique harmonieux, la liberté de mouvement et d'expression, l'absence de persécution et d'arrestation arbitraire, la libération de l'oppression, de la violence et de d'exploitation, la liberté de cultes, et la participation aux activités de société civile (Steeten, 1999).

Il existe quatre composantes principales du paradigme du développement humain : la productivité, l'équité, la soutenabilité et la responsabilisation (*empowerment*). Accroître les capabilités implique rehausser la productivité des agents économiques de sorte à les rendre agents actifs de la croissance. Ceci passe par leur participation au processus de création de richesse et d'emplois. En ce qui concerne l'équité, les agents économiques doivent avoir les mêmes chances ; pour ce faire toutes les entraves d'ordre économique, politique et social doivent être levées de sorte à permettre à tous les agents économiques de bénéficier des mêmes opportunités. La soutenabilité sous-tend que les considérations liées à l'équité ne doivent pas seulement se limiter aux générations présentes mais aussi aux générations futures ; ce qui implique que toutes les formes de capital (physique, environnemental et humain) doivent être régénérées. La responsabilisation suppose que les hommes et femmes participent activement à la conception et l'exécution des décisions touchant à leurs destinées.

Le concept de développement humain diffère sous plusieurs angles des approches conventionnelles basées sur la croissance économique, le développement du capital humain, et la satisfaction des besoins primaires. En effet, en partant de l'hypothèse que la croissance bénéficie à toute la société, les approches orientées sur la croissance économique font de la maximisation

de la croissance économique le seul objectif. En revanche, les approches du développement humain, axées sur une perspective beaucoup plus large, posent la croissance économique comme condition nécessaire mais pas suffisante de l'amélioration du bien-être. La croissance devient, dès lors, un moyen d'accélérer le développement humain et non une fin en soi. Le développement humain met concomitamment ensemble production, distribution, et expansion des capabilités tout en ayant un regard sur les choix que les personnes peuvent faire dans le but d'améliorer leurs niveaux de vie.

Une dernière caractéristique du concept de développement humain est l'importance de la complémentarité entre les dépenses touchant aux capacités humaines. Une illustration est donnée par Griffin et McKinley (1992) qui montrent que les dépenses de santé primaire ont une répercussion directe sur l'état de santé des pauvres. Cette amélioration de la santé accroît, par ricochet, l'efficience du processus de transformation des aliments en calories, et donc renforce les gains des programmes de nutrition infantile et maternelle. Des progrès en matière de nutrition rehaussent la capacité d'apprentissage des enfants et ainsi améliorent les rendements scolaires.

L'indicateur de développement humain (IDH)

L'indicateur de développement humain est un indice composite qui a été construit pour refléter les aspects fondamentaux du développement humain. Il capte les éléments fondamentaux que les personnes doivent disposer pour s'intégrer à la société et y apporter leur contribution. Aussi, permet-il de mesurer les résultats atteints en matière de satisfaction des besoins primaires, entre autres la connaissance, la longévité, et l'accès à une vie décente. L'indicateur du développement humain est la moyenne arithmétique de trois éléments : la santé/longévité, captée par l'espérance de vie à la naissance ; le niveau d'éducation mesuré par une combinaison du taux scolarisation aux trois niveaux et du taux d'alphabétisation, et le niveau de vie capté par le PIB en termes réels, exprimé en dollars pondérés des parités de pouvoir d'achat (PNUD, 1995 et 1999).

La technique de construction de l'IDH a évolué dans le temps, prenant en compte les nombreuses critiques formulées à son encontre. Les modifications intervenues permettent de mesurer les progrès réalisés et non plus les probabilités de souffrir de dénuement. Elles sont aussi

de nature à corriger les biais[53], engendrés par les méthodes permettant de passer des indicateurs de pauvreté aux indices.

La version originelle de l'IDH partait des indicateurs partiels de manque. L'espérance de vie à la naissance traduit le manque par rapport à un maximum établi par la moyenne des longévités les plus élevés. En 1994-1995, les *extrema* ont été établis de manière normative (minimum à 25 ans et maximum à 85 ans) de sorte à éviter que les pays développés ne constituent un horizon mobile pour les pays pauvres.

L'indicateur, saisissant le manque de savoir, était au départ le taux d'alphabétisation, avec un maximum à 100 %. Cet indicateur cède le pas, à partir de 1991, à une combinaison de la moyenne de durée de la scolarité et du taux d'alphabétisation. La pondération assignée au premier est un tiers tandis que le second occupe les deux tiers restants. En 1995, l'indicateur mesurant le manque en termes de savoir fut modifié, et la moyenne de la durée de la scolarisation substituée par le taux de scolarisation aux trois niveaux.

La variable choisie, pour capter le niveau de vie dans la version de 1990, était le logarithme du PIB par habitant en termes réels, affecté d'une pondération nulle au-dessus d'une valeur correspondant au seuil de pauvreté des neuf pays les plus riches. Pour tenir compte de l'utilité marginale décroissante des niveaux élevés de revenus, et du principe selon lequel un niveau respectable n'exige pas de revenus illimités, le PNUD eut recours à la formule d'Atkinson pour corriger les niveaux de revenus. Cette technique permet de comprimer les plus hauts revenus dans le calcul de l'IDH. Elle consiste notamment à faire augmenter progressivement la valeur de l'élasticité de l'utilité marginale du revenu par rapport au développement humain à mesure que le revenu augmente[54]. La formule d'Atkinson se présente comme suit :

$$Z(y) = \frac{1}{1-\varepsilon} y^{1-\varepsilon} \text{ avec } 0 \le \varepsilon \le 1$$

$Z(y)$ est l'utilité dérivée du revenu, y le revenu, et ε l'élasticité de l'utilité marginale du revenu par rapport au développement humain.

Soit y^* le seuil de pauvreté moyen de 17 pays industrialisés. Si $\varepsilon = 1$, le revenu n'a aucune contribution au développement humain. Si $\varepsilon = 0$, $W(y) = y$ et il en ressort qu'il n'y a pas de

[53] Le biais est en faveur des pays à revenu élevé.
[54] Chaque tranche est exprimée en multiple du seuil de pauvreté moyen de 17 pays industrialisés

décroissance du revenu ; ce cas représente celui des pays dont le revenu se situe entre *0* et y^*. Dans ce cas de figure, toute augmentation du niveau de revenu se transforme intégralement en une amélioration du niveau de développement humain. $\varepsilon = 1/2$ pour tous les pays dont le revenu est compris entre y^* et $2y^*$, et la formule d'Atkinson s'écrit alors : $W(y) = y^* + 2(y - y^*)^{1/2}$. $\varepsilon = 2/3$ pour tous les pays ayant un revenu compris entre $2y^*$ et $3y^*$, et la formule qui en découle se présente comme suit : $W(y) = y^* + 2(y)^{1/2} + 3(y - 2y^*)^{1/3}$. Des changements affectant la façon d'estimer le seuil interviennent en 1994. En effet, pour éviter que les pays développés ne demeurent la norme à atteindre, la valeur du seuil fut fixée à la moyenne mondiale du PIB par habitant, exprimé en parité de pouvoir d'achat. Une fois le revenu ajusté obtenu, l'indicateur est transformé en indice en utilisant la formule suivante :

Indice = (valeur réelle –valeur minimale)/ (valeur maximale –valeur minimale).

A rappeler que cette formule est valable et s'applique aux deux autres indicateurs constitutifs de l'IDH. Constatant que cette formule comprime sensiblement les revenus situés au-dessus du seuil, et handicape les pays à revenus élevés, le PNUD, dès 1999, modifie la méthode permettant d'obtenir l'indice captant le niveau de vie. Sur la base des travaux de Sen, la formule change de façon à pallier cet inconvénient. La formule proposée par Sen est la suivante :

$$W(y) = \frac{\log y - \log y_{\min}}{\log y_{\max} - \log y_{\min}}$$

Cette formule affecte l'ensemble des revenus, y compris ceux situés au-dessus d'un seuil retenu, et pénalise moins les pays à revenu moyen et élevé.

Une fois le niveau de l'IDH déterminé, les pays sont classés sur une échelle comprise entre 0 et 1, et regroupés selon la valeur de leur IDH. Trois catégories sont constituées : les pays à faible niveau de développement humain, comprenant les pays dont l'IDH est inférieur à 0.5 ; le pays à niveau moyen, pour lesquels l'IDH est compris entre 0.5 et 0.8 ; et les pays à niveau élevé, englobant tous les pays dont l'IDH est supérieur à 0.8.

En 1995, l'indicateur sexospécifique du développement humain (ISDH) et l'indicateur de participation féminine (IPF) ont été créés pour saisir les inégalités sociologiques entre sexes. L'*ISDH* mesure les résultats enregistrés en matière de développement humain corrigé des

inégalités reposant sur le genre. En effet, il se distingue de l'*IDH* par le fait qu'il intègre les disparités sociologiques entre hommes et femmes en termes d'espérance de vie, de niveau d'éducation et de revenu. L'indicateur de participation féminine *(IPF)* a été construit afin de cerner à quel point les femmes ont un contrôle sur leur destinée ; ce qui suppose la place qu'elles occupent dans la sphère politique et économique.

L'indicateur de pénurie de capacités (IPC)

Contrairement à l'*IDH* qui donne une idée sur le niveau des progrès atteints par toute une société en matière de développement humain, l'indicateur de pénurie de capacités (IPC) permet d'analyser la pauvreté à travers une approche par les manques, en insistant sur la condition des pauvres et des déshérités (PNUD, 1996, 1997). L'IPC cherche à estimer le pourcentage de personnes n'ayant pas accès au minimum des potentialités humaines élémentaires. Celles-ci sont au nombre de trois : « Tout d'abord, pouvoir s'alimenter correctement et être en bonne santé (potentialité mesurée par la proportion d'enfants de moins de cinq ans souffrant d'une insuffisance pondérale) ; ensuite, pouvoir enfanter dans des conditions salubres (potentialité représentée par la proportion d'accouchements intervenant sans l'aide d'une personne de santé compétente) ; enfin, pouvoir s'instruire et s'informer (potentialité mesurée par le taux d'analphabétisme chez les femmes). » (PNUD, 1996). Le revenu n'est pas pris en compte dans l'estimation de l'IPH parce qu'il est considéré comme étant une manifestation de la misère, et donc ne concerne que les moyens plutôt que les fins. Une fois que les valeurs des trois composantes de l'IPH sont trouvées, elles sont agrégées en affectant une pondération identique à chaque élément constitutif de l'IPH.

L'indicateur de pauvreté humaine (IPH)

Le PNUD introduit, en 1997, l'indicateur de pauvreté humaine en remplacement de l'indice de pénurie de capacités (IPC). Les principes directeurs qui ont guidé la construction de cet indicateur sont les mêmes que celles de l'IPC. Toutefois, des modifications ont été introduites dans le choix des variables, et ce pour tenir compte de la profondeur et de la spécificité de la pauvreté dans les pays en développement comparativement aux pays développés. L'IPH se fonde

sur des aspects les plus élémentaires des manques et déficits affectant la vie humaine : faible longévité, indicateur de survie, manifestant la vulnérabilité à la mort à un âge relativement précoce ; manque d'instruction de base, indicateur de savoir, signe d'exclusion du monde de l'écriture et de la communication ; et absence d'accès aux ressources privées et publiques, indicateur de la capacité à jouir d'un niveau de vie décent en termes de biens économiques (PNUD, 1998). En bref, l'indicateur de pauvreté humaine *(IPH)* est élaboré à partir de trois éléments de base que sont la longévité, l'instruction et l'accès aux ressources publiques et privées. Sa particularité tient au fait qu'il cherche à mesurer les risques. Ainsi, la faible longévité est appréhendée par le pourcentage des personnes courant le risque de décéder avant l'âge de quarante ans *(P_1)*, le manque d'éducation par le pourcentage d'adultes analphabètes *(P_2),* et le manque de conditions de vie décentes par la moyenne pondérée de trois indicateurs *(P_3)* (le pourcentage de personnes ayant accès à l'eau potable, le pourcentage d'individus ayant accès aux services de santé, et le pourcentage d'enfants de moins de 5 ans souffrant de malnutrition)). La formule de calcul est la suivante :

$$IPH = \left[(P_1^3 + P_2^3 + P_3^3)/3) \right]^{1/3}$$

Au vu du choix des variables, l'IPH ne semble capter que la réalité des pays en développement, et tend à supposer que la pauvreté n'est que l'apanage des pays du Sud. Or, il se trouve que le phénomène de pauvreté est également au centre des préoccupations des pays industrialisés. Pour combler ce déficit, un nouvel indicateur, plus encré sur la réalité des pays développés, Indice de Pauvreté Humaine-2, IPH-2, est élaboré par le PNUD à partir de 1998.

L'IPH-2 saisit non seulement les trois aspects de l'existence humaine présents dans l'IDH mais également la dimension exclusion, qui renvoie à la non participation des personnes aux systèmes démocratiques et juridiques, au marché du travail, au système assuranciel et de protection sociale, à la famille et la communauté. Au regard du grand rôle exercé par le marché du travail dans la définition du statut et du bien-être social de l'individu dans les sociétés industrialisées, les problèmes rencontrés sur le marché du travail sont placés au centre des analyses sur l'exclusion.

Les quatre variables retenues dans la mesure de l'IPH-2 sont les suivantes : le pourcentage de la population risquant de décéder avant 60 ans, qui saisit le déficit en termes de

survie ; le pourcentage de la population souffrant d'illetrisme, qui traduit le déficit dans le domaine de l'instruction ; la proportion de personnes dont le revenu disponible est inférieur à la demi-médiane nationale, qui mesure la pauvreté économique ; et le pourcentage de chômeurs de longue durée dans la population active, qui capte l'exclusion ou la non participation.

Faiblesses et forces du concept du développement humain

L'approche du développement humain a été critiquée pour plusieurs raisons. Premièrement, le développement humain a été décrit comme étant antithétique à la croissance économique parce qu'il est supposé privilégier la répartition des ressources au détriment de la création de richesse (PNUD, 1992). Deuxièmement, l'approche a été qualifiée de sectoriel en ce qu'elle recommande des interventions ciblées dans les secteurs de l'éducation, la santé, et les services sociaux. Enfin, la stratégie de développement humain a été longtemps considérée comme répondant exclusivement aux attentes des pays en développement ou pauvres. Nonobstant ces critiques, le concept de développement humain a cinq avantages majeurs. Premièrement, il s'intéresse directement au bien-être des populations. Deuxièmement, il est basé sur l'égalité de chances. Troisièmement, il permet de s'assurer que les bénéfices du développement sont repartis équitablement. Quatrièmement, il garantit l'interdépendance et la synergie entre les investissements dans différents secteurs clés du développement humain sont exploités. Enfin, le concept de développement humain permet de bénéficier de la complémentarité entre capacités humaines et capital physique.

CHAPTER III:

IS FISCAL POLICY BECOMING COUNTERCYCLICAL IN AFRICA[55]?

[55] We would like to thank Jean-Louis Arcand and Jean-Louis Combes for helpful discussions and pertinent comments on an earlier draft. We would also like to thank Roland Kpodar for sharing his program on Bootstraping.

I-INTRODUCTION

The adoption of multipartism and the systematic use of elections as means of selecting rulers were the key political developments in virtually all Sub-Saharan African countries during the 1990s. While some analysts viewed this development as opening a new area for improved economic performance, others were more pessimistic, fearing that democratic reforms would result in political instability and poor economic outcomes. The issue of the impact of democratisation is still a matter of debate, with each camp supporting its claim with some anecdotal examples. Even though the discussion on democracy among economists primarily focuses on potential correlation between democratic reforms and economic outcome such as growth, a growing number of papers explore economic policy changes that may be associated with democratic institutions. One area that is frequently explored is the effect of political regimes on government spending or social spending policies. Person and Tabellini (2004) analyse the impact of electoral rules and political regimes on the size of government spending in a large number of democracies. Stasavage (2003) investigates whether the move to a more democratic system has been associated with larger spending in primary education in African countries. Similar discussion also takes place in the context of other developing regions. Brown and Hunter (1999) and Kaufman and Segura-Ubiergo (2001) examine the impact of democratic reforms on public spending in Latin America.

This chapter follows the aforementioned central thesis, which is the effect of political reforms on public policies. However, the thrust of the chapter departs slightly from the mentioned studies and focuses on the impact of democratic reforms on the

cyclical properties of fiscal policy. More specifically, we ask whether the increase in political pluralism in many African countries in recent years has resulted in the adoption of more countercyclical fiscal policies. This question is of particular importance for at least one reason. The post-independence experience was characterised by the predominance of authoritarian regimes, riddled with patronage and interest groups whose continued loyalty was preserved by implicit and explicit government transfers. Such environment was, in part, condusive to stop-go policies, resulting in boom-bust cycles. On the one hand, positive shocks, such as an improvement in terms of trade, increased the pressure, especially from entrenched constituencies, for higher spending. Public spending therefore spiralled out of control during good times. On the other hand, negative shocks forced, though not instantly, countries to embrace fiscal consolidation. Against this background, the move towards political pluralism is expected to unleash more political competition. The likelihood of retaining office becomes closely related to the ability of rulers to pursue policies that increase the well-being of the median voter. If one assumes that countercyclical fiscal policies are welfare-enhancing, it is likely that governments favour such fiscal polices, which smooth out fluctuations in output and boost, or at least preserve, the well being of the majority.

The circumstances described above are those that prevail in a properly working democracy system. But it is not often the case in the majority of newly democratised African nations. One condition underlying the functioning of a well established democracy is the existence of objective information to the typical voter. This condition is unmet when voter loyalty to ethnic communities is strong. In such case, political competition does not always produce rulers that are keen of delivering national public

goods. Beyond the mechanisms guiding the selection of rulers, another important feature of a properly working democracy is the mechanisms that limit how power is used, which are often called "checks and balances". This dimension of democracy is the most difficult element to build as it takes time to introduce effective restraints on power. The foregoing arguments suggest caution in hastily drawing optimistic views about the impact of democracy on the cyclicality of fiscal policy. However, this does not imply that democracy is largely ineffective in Africa because political pluralism and freedom are essential values in their own rights. Moreover, even a scant improvement in civil liberties and political rights represents an institutional change, and it is worth exploring the implications of such change in the conduct of economic policies in general or more particularly on fiscal policy.

The chapter is divided into six sections. Section II reviews some of the theoretical support for the positive relationship between countercyclical fiscal policies and growth. Section III presents a brief literature review of the determinants of procyclical fiscal policy. Section IV highlights the ambiguous relationship between democratic institutions and countercyclical fiscal policies, thus providing the theoretical foundation for our analysis. Section V presents two country cases to illustrate our theoretical construct. Section V discusses data issues and the empirical strategy. Section VII confronts the implications of the theoretical framework with the data and comments the results. Finally, section VIII concludes.

II- COUNTERCYCLICAL FISCAL POLICIES AND LONG TERM GROWTH

Apart from being volatile, public spending tends to be procyclical in Sub-Saharan Africa. It increases during booms and experiences severe cuts in bad times. This procyclical nature of government spending is costly as it dampens economic growth and increases poverty. Why do procyclical fiscal policies hamper long term growth?

Endogenous growth models, especially those suggested by Aghion (1992) and Aghion et al. (2006), provide an interesting and compelling explanation of how countercyclical fiscal policy could positively affect long-term growth[56]. Aghion et al. (2006) argue that a recession is considered, in the Schumpeterian tradition, as a cleansing mechanism, whereby inefficient firms are eliminated and surviving firms experience deep restructuring. Such restructuring involves reallocating resources, innovating, and branching out to new markets. This process requires new investments, say, in the form of investment in R&D. If firms have full access to credit, the restructuring process goes smoothly, with firms investing in R&D and innovating. Ultimately, productivity growth is increased and long-term growth fostered. However, if firms evolve in an environment where credit is rationed, the restructuring process is impaired and protracted recession follows. For instance, if firms can only borrow an amount proportional to their current earnings, their borrowing capacity shrinks significantly with recession. Firms cut back on R&D expenditures and other necessary investments and may not be able to initiate the necessary restructuring activities. The degree of innovation slows down, and productivity

[56] Similarly, in the pure Keynesian tradition, increasing public spending during recession helps to stabilize the cycle and ensure a full employment. Tax smoothing (Barro, 1979: Lucas and Stockey, 1983) and public spending smoothing motives (permanent income theory) explain the conduct of counter-cyclical fiscal policy, with countries running deficits during recessions and surpluses during good times.

growth and long-term growth are reduced. The policy implication is that countercyclical fiscal policy can help achieve a seamless adjustment process and secures long-term growth in a financially constrained economy. In other words, government can increase public spending or reduce tax in order to boost the demand for firms' products and improve their growth prospects. These measures can also consist of providing direct incentives to firms through subsidies and other transfers to firms.

The R&D expenditure dynamics within firms is one of the main arguments put forward to justify a potential positive impact of countercyclical fiscal policy on long-term growth. The argument fits very well situations that prevail in developed countries and some of the more advanced developing countries, where R&D expenditure represents an important source of innovation. But such an explanation might not fully capture the specificities of other developing countries, especially Sub-Saharan African countries. In these countries, R&D expenditure tend be marginal, and innovation is very often brought about through imported capital goods, which require skilled labour in order to be used effectively and efficiently. This means that countercyclical fiscal policy may affect long-term growth in the poorest countries if for instance it can impact the human capital and the ability to import in these countries. It follows that human capital and real exchange channels are plausible chains of causation from countercyclical fiscal policy to stronger long-term growth.

A great deal of evidence suggests that crises can have long-lasting effects on human capital accumulation and economic growth (Lustig, 1998; Ocampo, 2002). This is primarily the outcomes of both household and government reactions in times of crises. During economic downturns, some households are forced to pull their children out of

schools. Long-term human capital is then eroded, and the long-run overall performance of the economy weakened. Similarly, governments facing mounting fiscal deficits during bust times cut in social spending, notably in education expenditure. These policies lead to setbacks in education enrolments and contribute to lowering long-term human capital and potential growth. The situation of African countries in the 1980s illustrates very well this point. One way of avoiding such an adverse development is to pursue a countercyclical fiscal policy. This implies increasing public spending, especially in social sectors, during bad times so as to avoid irreversible losses in human capital and sustain long-term growth. The argument is very much similar to the economic rationale for publicly funded safety nets.

The second mediating channel from countercyclical fiscal policy to higher output operates through real exchange rate. The reason is that developments in real exchange rate can determine export competitiveness, export earnings, and therefore the capacity to import, especially of countries that have limited access to international capital markets. More specifically, real exchange rate appreciates as a result of the accommodative fiscal policies that are adopted during boom times. This phenomenon is commonly dubbed as "Dutch Disease". The real appreciation of exchange rate exerts a negative impact on export receipts and undermines countries' ability to import goods, especially capital goods that represent an important source of innovation and productivity improvement.

Apart from the import channel, real exchange rate appreciation is accompanied by a structural transformation that can have an enduring impact on growth. The real appreciation of exchange rate caused by rising export prices has two opposite effects on the tradable sector. First, tradable industries that benefit from high prices, such as

commodity producers, expand significantly. Second, other tradable industries, including the manufacturing, that produce goods for which prices decline or experience modest gains, contract. The contraction may be so severe as to cripple these industries and making the situation irreversible even when booms end and real exchange rate depreciates. Since the manufacturing industry generates positive externalities or productivity advantages[57], over other sectors, such as those that produce commodities, a persistent decline of this industry impairs long-term growth. Again, fiscal policy can help prevent these negative outcomes by addressing the primary cause of real exchange rate appreciation. Implementing countercyclical fiscal policy during booms times, meaning pursing tight fiscal stance limits the overvaluation of real exchange rate and contributes to long-term productivity improvement and growth. If countercyclical policy is growth-enhancing, why have many developing countries persistently pursued procyclical fiscal policies?

III-DETERMINANTS OF PROCYCLICAL FISCAL POLICY

Understanding the factors underlying fiscal procyclicality has been a subject largely explored in the literature. However, this intense research generally tends to concentrate on developed or emerging countries and gives little space to Sub-Saharan African countries.

Many factors have been put forward to explain fiscal procyclicality in developing countries. Tornell and Lane (1999) link fiscal procyclicality to distributional conflicts

[57] These positive externalities and productivity advantages are diffused through learning by doing

over government resources. They argue that struggle among government entities (ministries, provinces) for public resources gives rise to a "voracity effect", whereby expenditures outpace windfalls. Likewise, Talvi and Végh (2000) argue that it is optimal for policymakers to run negligible primary surpluses during booms by boosting government spending and cutting tax rates. In contrast, Gavin and Perotti (1997) attribute the procyclicality of government spending in developing countries to the credit constraints these countries face. These constraints reduce their ability to borrow during recessions or busts thereby forcing them to adjust through cuts in public spending and/or increase in taxes.

Both factors, i.e. distributional conflict and credit constraints, come into play in determining the fiscal policy stance in many African countries. Because of the narrowness of their export structures as well as their domestic economic activities, those countries are likely to suffer much more from exogenous shocks than other developing countries. In other words, African countries are more prone to distributional conflicts than other developing countries. In addition to their vulnerability to exogenous shocks, most of the countries in the region have a limited or no access to international capital markets. However, these two constraints do not necessary imply that fiscal policy in the region is doomed to experience procyclicality. Democratic institutions can be conducive to both procyclical and countercyclical fiscal policies.

IV-DEMOCRATIC INSTITUTIONS AND CYCLICAL PROPERTIES OF FISCAL POLICY

4.1 Democratic institutions conducive to procyclical fiscal policies

There are some reasons to believe that the advent of democracy might exacerbate the procyclicality of fiscal stance. That view is supported by the political business cycle[58] argument, especially the opportunistic version of that argument, and the argument based on corruption. Opportunistic political business cycle theory posits that incumbents facing competitive elections engage in economic policy manipulation to induce economic expansions prior to elections, therefore increasing their chances to get re-elected (Nordhaus, 1975: Lindbeck, 1976: Tufte, 1978). The manipulation of economic policy tools consists in pursing expansionary monetary and fiscal policies before elections and adopting contractionary polices after elections. This situation is said to be particularly acute in new democracies as, for example, the newly democratised African states. At least two main factors explain the widespread of politically motivated policies in newly democratised countries (Block et al., 2003: Brender and Drazen, 2004). First, during transitions from dictatorships to democracies, authoritarian leaders tend to have enough leeway to distort economic policies in their favour. Initial competitive elections provide them with the opportunity to discourage entry by future challengers. Showering constituents with public spending increases around election time, for instance, boosts the

[58] The political business cycle theory has two versions. The first is termed "rational partisan cycle" and emphasizes the importance of ideology as the driving force behind the cycle generated before election. The second is dubbed as "opportunistic business cycle" and highlights the opportunistic behaviour of all incumbents independently of ideology or partisanship (Hibbs, 1977: Alesina et al., 1997). Evidence suggests that opportunistic business cycle is more common in Africa (Ka and van de Walle, 1994).

incumbents' credentials and public support before the opposition has any say on the design and conduct of economic policies. Such behaviours are made easier by the lack of significant institutional constraints, such as a free press or independent legislatures, which reduce the degree of discretion for incumbents to manipulate macroeconomic policies. Second, some deficiencies are inherent to transitions from dictatorships to democracies. Constituents generally lack information about candidates and are not very much knowledgeable about the functioning of a democracy, thus providing incumbents with further incentives to engage in politically motivated policy interventions. However, it is worth noting that falling into political budget cycles is not purely identical to conducting procyclical policies. For instance, conducting expansionary fiscal or monetary policies prior to elections does not always mean that governments impart a procyclical bias to policies. It is only true when the economy is booming before the elections. Similarly, pursuing contractionary fiscal or monetary policies after elections amounts to conducting procyclical policies only if economies experience recessions after elections.

The second argument that is put forward in explaining procyclical policies, and in particular procyclical fiscal policy, in nascent democracy lies on corruption (Alesina and Tabelleni, 2005). Numerous accounts point to widespread corruption in some of the African countries characterised by authoritarian regimes (Ake, 1990). That feature persists during the transitions from authoritarian rule to democracies.

The "corruption" argument rests on the premise that constituents do not trust corrupt governments when it comes to managing additional resources. The public tends to believe that any additional government revenue will be siphoned off through distributing favours to special groups close to the government or the increase of the

consumption of government officials. Thus, in line of the "starve the Leviathan" argument the constituents demand increases in public spending, transfers or public investment, whenever the economy experiences a positive shock. This is one way for constituencies to hold governments accountable. Such demand forces governments to pursue a procyclical fiscal stance during good times. Alesina and Tabelleni (2005) illustrate this using a principal-agent framework wherein constituents represent the principal and the government the agent.

4.2 Democratic institutions conducive to countercyclical fiscal policies

Democratic institutions can mitigate credit constraints and the "voracity effect", the two main causes of procyclical fiscal policy. Democratic systems per se can not address credit constraints but they have the potential to cure the leading factor of procyclical fiscal stance: rising government spending during expansions. Access to international capital markets is closely linked to the business cycle, with capital flows pouring during good times and drying up during recessions. This means that the issue of access to international capital markets often cited in the literature is of relevance only when crisis erupts. In different circumstances, i.e. during booms, countries enjoy large capital inflows, and the challenge during those times is to follow prudent fiscal polices, such as putting aside windfalls. These policies would ultimately gives more room of maneuver for expansionary fiscal stance during recessions. However, the political acceptance of cautious fiscal policies during expansions may be hard to sell, notably in African countries. Poor infrastructure, widespread poverty, low levels of human

development, and the pressing need to address these problems places pressure on government expenditure. Public pressure for more public spending during good times could be lessen if governments are enough persuasive and "trusted". These two qualities may critically depend on their legitimacy and to the extent to which they are accountable to the people: the electorate. Legitimacy may be gained through political competition, notably free and fair elections, while accountability may be guaranteed by what we previously call "checks and balances" institutions, which are restraints on the executive branch. Interestingly, political competition and checks and balances are two important aspects of a properly working democracy. Consequently, one may expect democracy to facilitate governments' plan to follow responsible fiscal policy during good times and set a stage for an expansionary fiscal stance during recessions.

Distributional conflicts can also be mitigated by what Rodrik (1999) refers to as "institutions of conflict management", and these institutions include "democratic institutions, an independent and effective judiciary, an honest and non-corrupt bureaucracy, and institutionalized modes of social insurance". In sum, if democratic institutions carry transparency and accountability values, they are likely to put a restraint on a fierce competition for public resources during good times and open avenue for a more relaxed fiscal policy during bad times.

The argument advanced in this chapter is therefore that the democratic nature of political institutions matters for the cyclical stance of fiscal policy. Countries with sufficient checks and balances on the executive power are in a better position to conduct countercyclical fiscal policy than countries with weak institutions.

4.3 Theoretical Model

Even though the chapter entirely concentrates on fiscal policy, the empirical model is a slight modified version of the standard Taylor rule's monetary model, without inflation deviation term. Following Calderòn et al. (2004), our baseline model specification is as follows:

$$(g_{i,t} - g^*_{i,t}) = \lambda_1 + \lambda_2(g_{i,t-1} - g^*_{i,t-1}) + \lambda_3(y_{i,t} - y^*_{i,t}) + \lambda_4(y_{i,t} - y^*_{i,t})I_{i,t} + n_i + u_{i,t} \quad (1)$$

where i and t represent the country and the period, respectively; $(g_{i,t} - g^*_{i,t})$ is the difference between actual government spending and its long-run value; $(g_{i,t-1} - g^*_{i,t-1})$ denotes the deviation of lagged government spending from its long-term trend; $(y_{i,t} - y^*_{i,t})$ represents the output-gap, meaning the deviation of real GDP from its long-term trend; $I_{i,t}$ captures the quality of political institutions; n_i denotes the unobserved country-specific effects and $u_{i,t}$ is the error term. The additional point that is being brought in the discussion is that the quality of political institutions might help attenuate the potential detrimental effect of shocks on the soundness of policies.

Since the deviation of real GDP from its long-term trend is assumed to be capturing exogenous shocks African countries are confronted with, we replace the expression $(y_{i,t} - y^*_{i,t})$ by the term $S_{i,t}$, with $S_{i,t}$ representing the exogenous shocks. This formulation builds on the argument that shocks, such as terms of trade volatility, impact negatively the design and implementation of sound economic policy (Guillaumont et al., 2003). Substituting $(y_{i,t} - y^*_{i,t})$ by $S_{i,t}$ leads to the following structural equation:

$$(g_{i,t} - g^*_{i,t}) = \lambda_1 + \lambda_2(g_{i,t-1} - g^*_{i,t-1}) + \lambda_3 S_{i,t} + \lambda_4 S_{i,t} * I_{i,t} + n_i + u_{i,t} \quad (2)$$

λ_2 captures inertia effect and is expected to display a positive sign but smaller than 1. The coefficient on shocks, λ_3, is also expected to carry a positive sign while that on the interaction term, λ_4, is supposed to be negative. The joint statistical significance of λ_3 and λ_4 may indicate the existence of a trade-off mechanism, with two opposite forces in action. First, the occurrence of a positive (negative) shock induces governments to favour an expansionary (contractionary) fiscal policy stance. Second, the same positive (negative) shock, in the presence of sound political institutions, induces a countercyclical fiscal response: a relaxed (tight) fiscal stance in the presence of negative (positive) shock.

The theoretical framework developed below entirely concentrates on the concept of democracy, therefore ignoring the two attributes of democracy we refer to in the discussion: electoral competition and checks and balances. These two formal dimensions of democracy can be integrated in the analysis and replace the democratic institution variable, and the model specification becomes:

$$(g_{i,t} - g^*_{i,t}) = \lambda_1 + \lambda_2(g_{i,t-1} - g^*_{i,t-1}) + \lambda_3 S_{i,t} + \lambda_4 S_{i,t} * CE_{i,t} + \lambda_5 S_{i,t} * RB_{i,t} + n_i + u_{i,t} \quad (3)$$

where $CE_{i,t}$ and $RB_{i,t}$ are the measures of competitive elections and the restraints on the executive branch, respectively. If electoral competition is the key channel through which democratic institutions exert their influence on fiscal policy stance, λ_4 will appear with a statistically significant negative sign while λ_5 will be statistically insignificant. On the contrary, if the main mediating channel is through checks and balances, the interaction between exogenous shock and restraints on the executive branch, $S_{i,t}*RB_{i,t}$, will enter the regression negative and significant while the coefficient on the interaction between exogenous shock and political competition, $S_{i,t}*CE_{i,t}$, will be insignificant.

V- COUNTRY EXPERIENCES

A brief country-specific analysis is conducted to show how democratic institutions can potentially affect fiscal policy stance. The analysis will also reveal the transmission channels supporting the relationship between fiscal policy stance and democracy. The exercise will be a selective analysis of only two African countries: Botswana and Nigeria. Botswana is considered as the brightest spot in the continent in terms of avoiding procyclical fiscal policies while Nigeria constitutes in many views the typical example of how poor institutions can give rise to procyclical fiscal policies.

5.1 Botswana

Apart from being the most well-known economic success story in Africa, Botswana is perhaps, with Mauritius, one of the most politically stable and democratic nations in the continent. Since gaining independence in 1966, Botswana has organised multipartite elections every five years, which all have been won by the ruling Botswana Democratic Party (Tsie, 1996). Even though views differ on whether Botswana is a genuine democracy, with competitive elections, a vast majority of analysts agree that the country has an independent judiciary system and a relatively free press and has actively pursued a broad based participation approach in designing public policies.

The Botswanan legal system functions effectively. The constitution of the country provides for an independence of the judiciary system from the executive and the legislative branches, and this provision is largely abode by. Also, standards of conduct in civil, commercial, and political life are high. Corruption or misuses of position cases,

though rare, are prosecuted by the independent Directorate for Corruption and Economic Crime. As a result, Botswana compares favourably to other developing countries in terms of the quality of the judiciary system. The country ranked 11th worldwide according to the World Economic Forum, Global Technology Report 2003-2004.

The press is relatively free. Even though that there is only one daily newspaper, which is state-owned, there are many weekly newspapers that are free to take a critical stance about the government and inquire about allegations of public mismanagement.

The third important feature of Botswanan institutions is the degree of participation of a broad-section of the society in the formulation of policies. Such participation limits the degree of discretion of the elites to manipulate policies in their favour.

The aforementioned features contribute to constraining the power of the executive branch, thus limiting rent seeking behaviours and corruption. The foundations of some of these elements of constraints on the executive are grounded in the Botswana's pre-colonial institutions, which were not altered by the British colonisation (Acemoglu et al., 2003). The institution that is often cited as having contributed to fostering the culture of openness to criticism is the *Kgotla*. Acemoglu et al. (2003) argue that "the *Kgotla* was an assembly of adult males in which issues of public interest were discussed. Both wards and the whole society itself had *kgotlas*. Even though they were supposed to be advisory they seem to have been and effective way for commoners to criticize the King. They also were the venue where the king heard court cases and law was dispensed".

The effective constraints on the executive ensure transparency and accountability in managing mineral booms. The country resisted to spending effects of the diamond

booms. Instead, any excess revenue from the mining sector was set aside, in the form of foreign exchange reserves, and drew in years when revenues were low, like in the earlier 1980s and 1990s. Thus, Botswana was able to smooth public spending relative to public revenue.

5.2 Nigeria

In contrast to Botswana, Nigeria's economic performance has been startlingly poor. The country has grown poorer since mid 1970s, leaving its per capita GDP in 2005 among the 20 lowest in the world. The country experienced high political instability, with a succession of many civilian and military regimes. Eifert et al. (2003) classify Nigerian military regimes as predatory autocracies and suggest that power in such systems "is not based on broad public support or economic performance; rather, military power and the support of a narrow elite are the basis for authority… state power faces few constraints." The lack of legitimacy and constraints on the executive creates a lot of pressure on public spending during oil booms. Significant shares of oil windfalls were squandered through inefficient public investment (Sala-i-Martin and Subramanian, 2003) or implicit transfers to specific groups. One of these implicit transfers consists in selling to specific agents foreign exchange at an official rate that is below the market price (Azam, 1999). This amounts to allocating implicit subsidies to these agents. Since the increases in government expenditure were not sustainable, the country was forced to undertake fiscal adjustment during bad times. Fiscal policy tends therefore to be highly procyclical.

One interesting aspect of Nigeria case is that civilian rule has dominated the country from 1960 to 1966, from 1979 to 1983, from 1998-2003 and since 2003. These

periods were all marked by intense political pluralism and multipartite elections, but the only period where some effective restraints were introduced is the period after 2003, which corresponds to the second term of President Obasanjo. Institutions have been established during this period to improve the standards of conduct in political and economic life, thus restraining government officials from plundering oil windfalls. Two independent commissions are at the forefront of Nigeria's fight against corruption. First is the Economic and Financial Crimes commission. Its main role is to investigate allegations of economic and financial crimes and bring charges against people involved in these crimes. The second, which complements the first, is the Independent Corrupt Practices Commission. It main duty is to receive complaints and prosecute alleged financial and economic criminals. Other tasks assigned to the commission include education and enlightenment of the public about bribery, corruption, and other related offences. The commission is also in charge of assessing and suggesting an overhaul of the activities of public bodies that may encourage corruption.

This period is perhaps the first successful attempt to conduct prudent fiscal management and accumulating savings during boom times. The country has been able to build-up impressive foreign reserves and even to repay ahead of schedule its foreign debt. One this account, one can conjecture that the attribute of democracy that matters the most for the ability of a country to conduct countercyclical or neutral fiscal policy is the existence of checks and balances institutions rather than electoral competition.

VI -DATA ISSUES AND EMPIRICAL STRATEGY

6.1 Data

The dataset used for the empirical investigation consists of annual observations (1989-2002) for 47 African countries. This gives a panel dataset, which allows us to exploit both time-series for each country and cross-country differences. The panel is not balanced because of some missing observations. The reason that we decide to start from 1989 is qualified by the fact that this year roughly corresponds to the beginning of democratic reforms on the continent. Prior to 1989, virtually all countries were ruled by one-party regimes.

6.1.1 Dependent variable

The dependent variable of the model is the cyclical behaviour of fiscal policy. What remains unclear is the indicator that should be used to estimate the cyclicality of fiscal policy.

Which indicators to use for fiscal policy?

The analysis of the cyclical properties of fiscal policy requires a clear understanding of the concept of "policy cyclicality". The most widely prevailing view in the literature is that policy cyclicality is seen through outcomes, such as fiscal balance, tax revenues, rather than through policy instruments, such as government spending and

tax rates. However, there are compelling arguments in favour of the policy instrument approach, and table 1, which is excerpted from Kaminsky et al. (2004), clearly backs this view.

Table 1: Fiscal Indicators: Theoretical Correlations with the Business Cycle

	GS	Tax Rates	TR	PB	GS/GDP	TR/GDP	PB/GDP
Countercyclical	-	+	+	+	-	+/0/-	+/0/-
Procyclical	+	-	+/0/-	+/0/-	+/0/-	+/0/-	+/0/-
Acyclical	0	0	+	+	-	+/0/-	+/0/-

Source: Excerpt from Kaminsky, Reinhart and Végh (2004)
GS, TR, PB and GDP mean Government Spending, Tax Revenues, Primary Balance and Gross Domestic Product, respectively

By assuming that government spending is exogenous and tax revenues are equal to tax base multiplies by tax rates, Kaminsky et al. (2004) show that only government spending and tax rates display unambiguous signs for different policy stances. A positive association between government spending and business cycles, or shocks, will suggest a procyclical fiscal policy; a negative correlation between these two variables will indicate a countercyclical stance while the absence of correlation will point to a neutral-fiscal stance. Moving to tax rates, which is defined as tax revenues divided by the tax base, a fiscal policy is said to be procyclical when the correlation between tax rates and business cycles, or shocks, is negative, meaning tax rates decrease in boom periods and increase in bust periods. Conversely, a fiscal policy is qualified as countercyclical if tax rates rise in good times and decline in bad times. Finally, fiscal policy is seen as acyclical when there is no correlation between tax rates and business cycles, or shocks. This clear-cut definition of fiscal policy stance based on government spending and tax rate variables stands in contrast to what comes from other fiscal indicators, such as tax revenues.

We will illustrate this by focusing on one fiscal indicator reported in table 1, namely tax revenues. A countercyclical fiscal policy in terms of tax revenues means that these revenues rise in good times and drop in bad periods, suggesting therefore a positive correlation between business cycle, or shocks, and tax revenues. What is confusing is that the very same patterns might indicate the pursuit of a neutral fiscal stance. Indeed, a positive (negative) shock could give rise to increased (decreased) tax revenues, via the widening (shrinking) of the tax base, even if tax rates are kept constant[59]. Moreover, the positive association between tax revenues and business cycles can be an indication of a procyclical fiscal policy as well. Higher tax revenues in good times can go hand-in-hand with lower tax rates, provided that tax base increases substantially. Conversely, lower tax revenues in bad times can be accompanied with rising tax rates, which aim at offsetting the shrinkage in tax base.

Because of the ambiguous cyclical behaviour of primary balance, government revenues, and other variables presented in table 1, we will base our analysis on government spending[60] indicators, which provide a clear-cut measure of fiscal stance. Government spending will be captured through the government total expenditure and the government current expenditure. These two variables will be denominated in constant terms.

Once we decide to define the cyclicality of fiscal policy in terms of public spending, a question arises as how to measure cyclicality. We favour the approach that

[59] This is very much similar to the automatic fiscal stability argument.
[60] Even though tax rates fits into the group of indicators that give an unambiguous measure of fiscal stance, it is dropped because of data availability concern.

consists in using the deviation of fiscal spending from its corresponding country average[61].

6.1.2 Explanatory variables

Turning to one of the key explanatory variables, the exogenous shock, $S_{i,t}$, we focus on terms of trade shock, which we believe is one of the most important shocks in the context of African countries.[62] Gauging the shock requires splitting terms of trade into a trend component and a volatility component and then uses the volatility component as the measurement of cyclicality. Two approaches are used. Firstly, we resort to the Hodrick-Prescott (H-P) filter, which generates a smooth trend and stationary deviations[63]. The deviation of terms of trade from its H-P- filtered trend will then capture the shock[64]. Secondly, we turn to the approach suggested by Combes et al. (1999) for robustness check. That approach assumes a broad specification, with series having the following structure:

$$X_{i,t} = a_i + b_i t + c_i X_{i,t-1} + \varepsilon_{i,t}$$

[61] It has been shown in Chap I that public spending series are stationary around a drift.
[62] Ideally we should have added a variable that capture climate hazard. Agricultural sector output seems to be the ideal candidate but turns empirically not to be significant.
[63] Following the frequency rule of power of Rvan and Uhlig (2002), we put the value of the smoothness parameter at 100.
[64] The Hodrick-Prescott (HP) filter tool has been criticized on many grounds. Some of criticisms point to the arbitrary choice of the smoothness parameter. Additionally, it is shown the HP filter does not handle effectively structural breaks. Another weakness highlighted in the literature is the instability of the HP filter in the beginning and end of the sample because of its symmetric two-sided structure. Though the HP filter meets numerous criticisms, it is still commonly used because alternative tools are far from being perfect too. For instance, the Band-Pass (BP) filter designed by Baxter and King (1995) defines a cycle period between 6 and 32 quarters, which could be considered as arbitrary. Moreover, the BP filter has end-point instability problem too.

where $X_{i,t}$ is the variable of interest in country i and in period t. This equation suggests that variables can potentially have two components: stationary (a_i) and non-stationary ($b_i t + c_i X_{i,t-1}$). The non-stationary component could display a deterministic or/and a stochastic trends. The shock could then be captured by the error term $(\varepsilon_{i,t})$.

As far as the democratic institutions are concerned, we identify two indicators from Freedom House Database. Those are *Political Rights Index* and *Civil Liberty Index* and range from 1 to 7, with 7 representing the most drastic privation of political freedom (civil liberties Index) and 1 representing the largest political freedom (civil liberties) instances. For convenient reasons, we favour transforming *Political Rights Index* and *Civil Liberty Index* from a decreasing to an increasing function. We add 7 to the product of -1 times the scores of these variables.

Table 2: Correlation Matrix between Civil Liberties and Political Rights

	Civil Liberties Index	Political Rights Index
Civil Liberties Index	1	0.856
Political Rights Index	0.856	1

We introduce in the empirical investigation other measures of democracy to keep in with the growing consensus that there are some dimensions of democracy that are relevant for economic performance than others (Keefer, 2004; Collier and Hoeffler, 2005). Measures of "checks and balances" as well as indicators of political competition are introduced in the analysis to gauge the relative importance of these factors in determining fiscal policy stance. We revert to one indicator, *POLCOMP*, from *POLITY 4* Database, and another from the Database of Political Institutions: *CHEC*. On the one

hand, *POLCOMP* measures the competitiveness of executive recruitment and is meant to capture the degree of electoral competition. Its value ranges from 1 to 7, with higher numbers indicating stronger competition. On the other hand, *CHEC* measures how many political actors can blockpropose the legislation, therefore capturing the intensity of the constraints that the executive faces. This variable is expected to measure "checks and balances". The highest value of this variable is also 7 while the lowest is 1. Higher score corresponds to more constraints on the executive and consequently lower independence of the executive.

6.1.3 Control variables

We add a small set of variables to control for the impact of political business cycle, demographic factors, and openness, on fiscal stance. As argued before, politically motivated fiscal policy can be pursued before elections, contributing to expansionary stance during these times. We introduce presidential electoral dummy[65] to capture this dynamic. The demographic argument posits that a high dependency ratio demands governments to commit more public resources to satisfy the growing needs of the population. The demographic view is captured through the dependency ratio, which is the ratio of people younger than 15 and older than 64 to those age between 15 and 64 years. Finally, the rationale behind including trade shares as a control is to gauge the openness

[65] The data on elections is compiled from CIA-World Factbook and Wikipedia, the free encyclopedia.

of countries[66]. This might determine the extent to which countries have access to international capital markets, thus their ability to borrow in order to smooth public spending over time.

6.2 Empirical Strategy

The model that we estimate is the following:

$$(g_{i,t} - g^*_{i,t}) = \lambda_1 + \lambda_2 (g_{i,t-1} - g^*_{i,t-1}) + \lambda_3 S_{i,t} + \lambda_4 S_{i,t} I_{i,t} + n_i + u_{i,t} \quad (5)$$

Our empirical analysis will be based on Equation (5). The use of OLS is likely to generate biased and inconsistent estimates at least for two reasons. First, the lagged dependent variable is expected to be correlated with the error term, violating therefore the assumption of the exogeneity of right-hand-side variables. Second, failure to account for unobserved country-specific affects, n_i , also violates the exogeneity assumption. An appealing approach to deal with unobserved heterogeneity is to first-difference (5), which allows to get rid of the individual effects. Then, the endogeneity problem is addressed by instrumenting the variable(s) that are suspected to be correlated with the error term. Following the standard arguments on the use of instrumental variables, $g_{i,t-2} - g^*_{i,t-2}$, is considered as a suitable instrument. Such an approach is termed in the literature as the "Anderson and Hsiao (1982) approach".

The instrumental variable estimator of Anderson and Hsiao is consistent as the sample size widens. However, it is asymptotically inefficient when the time dimension is bigger than 3, meaning that all the available instruments (or orthogonality restrictions)

[66] Ideally, financial variables would have the first choice but we could not get enough reliable data for the period considered.

are not used. Arrelano and Bond (1991) propose a remedy for that problem by developing a Generalised Method-of-Moments Estimator (GMM) that uses all the orthogonality restrictions. All possible lags of the dependent variable from at least two periods earlier and eventually lags of other right-hand side variables are used as instruments. However, Blundell and Bond (1998) demonstrate that first-differenced GMM have poor finite sample properties. Bond et al. (2001) indicate that this is the case when the series are close to a random walk or when variance of the country-specific effects n_i rises relative to the variance of error term.

In order to address the problem associated with persistent panel data, Blundell and Bond(1998) develop a system GMM estimator that is based on a simultaneous system of two equations, which are the equation in level and that in difference. Lagged variables serve as instruments for the differenced equation while their lagged first-differences are the instruments for the equation in level.

The validity of the instruments is established by using an over-identification test. This could be either the Sargan (1958) test of overidentifying restrictions or the Hansen (1982) J-test, both testing whether the instruments are orthogonal to the error terms. This should be complemented by a test on the no residual serial autocorrelation.

VII-RESULTS

The results of the implementation of our empirical construct are presented in this section. We consider terms of trade volatility as the measurement of exogenous shock because of the prominence of this factor in the debate on export performance, GDP

growth, and fiscal policy in the context of African countries (Deaton, 1999). The rationale is that the export basis of many African countries tends to be concentrated in a few major primary commodities, making exports, government revenues, and expenditures in these countries highly dependent to developments in commodity markets. We then check the robustness of our results to alternative indicators or measurement of democratic institutions and fiscal stance. Finally, we identify the critical aspect(s) of democracy that are of relevance for conducting countercyclical fiscal policies.

7.1 Terms-of-trade shock, democratic institutions, and fiscal policy stance

7.1.1 Fiscal policy stance captured through government expenditure

Column 1 in Table 3 reports the relation between the cyclicality of government expenditure, terms-of-trade shock, and democratic institutions. Democratic institutions are measured by the Civil Liberties Index*, ICL*, which is derived from Freedom House (2005). Fiscal stance is captured by the deviation of government expenditure from country average normalised to country average. Terms-of-trade shock is derived from the H-P cyclical component of terms of trade normalised to the filtered-trend, and weighted by trade shares[67] (Guillaumont et al., 1999, Combes and Saadi-Sedik, 2006). In line with the model developed below, we introduce lagged fiscal stance to account for possible persistent effects of previous fiscal policies. All the coefficients in this regression turn to

[67] The idea is to capture the degree of exposure of countries to terms-of-trade shocks. The more open the countries are the more they are exposed to terms-of-trade shocks.

have the theoretically expected signs and are statistically significant at conventional levels. The coefficient on lagged fiscal policy cyclicality is positive, indicating the existence of some degree of persistence in fiscal policy stance. The jointly positive coefficient on terms-of-trade shock and negative coefficient on the interaction between terms-of-trade shock and democracy is consistent with the trade-off concept developed in the theoretical model. An exogenous shock is conducive to the adoption of procyclical fiscal policy, but this outcome can potentially be alleviated and even reversed in the presence of sound democratic institutions. Since some of the variables may be very volatile, a question then arises as what is the relative magnitude of the effects of the significant explanatory variables. We respond to this question by reverting to the concept of "standardised beta coefficients" outlined by Isham et al. (2006). These coefficients are the product of the coefficient on the variable of interest and the standard deviation of that variable, divided by the standard deviation of the dependent variable. Results on these coefficients are reported in column (1'). Interestingly, they suggest higher persistency of fiscal policy, but more importantly they indicate the effect of the interaction of terms-of-trade shock and democratic institutions may be as strong as the impact of the terms of trade alone, meaning that democratic institutions could completely offset the negative effect of terms-of-trade on the ability of government to pursue countercyclical fiscal policies.

Table 3: Determinants of the cyclicality of Government Expenditure

Dependent variable is the deviation of Government Expenditure from the period average[a]

	SYS-GMM (1)	(1')	SYS-GMM (2)	(2')
(Lagged GE-Mean GE)	0.7821***	0.7621	0.9591***	0.9591
	(0.1440)		(0.0906)	
TOT Shock[b]	0.7013*	0.3521	0.8051*	0.4042
	(0.3605)		(0.4547)	
TOT Shock*ICL	-0.2678**	-0.3621		
	(0.1262)			
TOT Shock*IPR			-0.2320**	-0.3111
			(0.1133)	
Number of Observations	160		160	
Number of Countries	25		25	
Chi-Square(Hansen over-id test)	1.00		1.00	
AR(2) (Test for Serial Autocorrelation)	0.238		0.145	
Variables that are instrumented	GE and ICL		GE and IPR	

Note: Robust standard errors are in parenthesis
GE, TOT, ICL and IPR stand for Government Expenditure, Terms of Trade, Civil Liberties Index and Political Rights Index, respectively. Time dummies are included and they turn not to be significant
a. The deviation of government expenditure from the period average is normalised to the country average
b. The deviation of terms trade from its H-P-filtered trend is normalised to the same H-P-filtered trend and weighted by the trade shares
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
* denotes significance of the estimates at 10 percent critical level

We repeat the same exercise but instead consider an alternative measure of democratic institutions. We therefore use political liberties index as a check. This choice is supported by table 2, which clearly shows that the two measures are highly correlated. The results displayed in column 2 and (2') are roughly similar to those found in column 1 and (1'). Persistent effects of precedent fiscal policy stance tend to be statistically significant, albeit their strength appears to be much stronger. The coefficients on terms-of-trade shock and the interaction between terms-of-trade shock and political rights index are jointly significant, with the theoretical signs predicted by our model. As far the

relative magnitude of the effects of the right-hand-side variables is concerned, we find the interaction between terms-of-trade shock and political rights index to be more modest and to offset only partially the procyclical bias of terms-of-trade shock.

7.1.2 Fiscal policy stance captured through government current expenditure

One concern with our results in table 3 is that they may depend on the choice of the measure for the dependent variable. To shed some light on this issue, we estimate the same model as in table 3, but with other measures of public spending: current expenditure[68]. Results are then summarised in table 4. They lend strong support to the argument that democratic institutions are conducive to the adoption of countercyclical fiscal policies.

[68] In addition to current expenditure, we try with current expenditure minus interest payments but the results turn to be roughly identical.

Table 4: Determinants of the cyclicality of Government Current Expenditure

Dependent variable is the Deviation of Government Current Expenditure from the period average[a]

	SYS-GMM		SYS-GMM	
	(3)	(3')	(4)	(4')
(Lagged GCE-Mean GCE)	0.8331***	0.8024	0.8831***	0.8506
	(0.585)		(0.0921)	
TOT Shock	0.8976*	0.4651	0.8332**	0.4317
	(0.4566)		(0.3895)	
TOT Shock*ICL	-0.2380*	-0.3335		
	(0.1217)			
TOT Shock*IPR			-0.2043*	-0.2841
			(0.0843)	
Number of Observations	155		155	
Number of Countries	25		25	
Chi-Square(Hansen over-id test)	1.00		1.00	
AR(2) (Test for Serial Autocorrelation)	0.386		0.315	
Variables that are instrumented	GCE and ICL		GCE and IPR	

Note: Robust standard errors are in parenthesis
GCE, TOT, ICL and IPR stand for Government Current Expenditure, Terms of Trade, Civil Liberties Index and Political Rights Index, respectively. Time dummies are included and they turn not to be significant.
a. The deviation of government current expenditure from the country average is normalised to the period average
b. The deviation of terms trade from its H-P-filtered trend is normalised to the same H-P-filtered trend and weighted by the trade shares
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
* denotes significance of the estimates at 10 percent critical level

All the results that have so far been reported are based on a specific measure of terms-of-trade shock. This measure lies on a H-P filter. We now seek to establish the robustness of our results by replacing H-P-based measure by the measure recommended by the residual approach.

7.2 The residual approach

Table 5 presents two regressions, in which terms-of-trade shock is captured through the deviation of actual terms of trade index from its fitted value, and the

dependent variable in these regressions is the deviation of government total expenditure from country average. The indicator of terms-of-trade shock is an estimated variable. Therefore, its standard error is likely to be biased. We correct this bias by using the method of bootstrapping, which is a commonly used method of resampling (Wooldridge, 2002). The general idea is to consider the observed sample as the population and, at each iteration, draw from this sample a sub-sample that is used to estimate coefficients on terms-of-trade shock and on the interaction between terms-of-trade shock and political institution variables. Several iterations[69] are run and the estimated coefficients are used to compute the real values of the standard errors.

The results reported in column 5 are satisfactory as all the coefficients on explanatory variables appear with the theoretically expected signs. Lagged fiscal stance has significant and high explanatory power on current fiscal policy, suggesting persistent effects. Column 5 also indicates that terms-of-trade shock potentially introduces a procyclical bias to fiscal policy, as shown by the positive coefficient on terms-of-trade volatility. Finally, the interaction between terms-of-trade shock and institutions, measured by civil liberties index, *ICL*, appears with a significant negative coefficient, confirming the offsetting impact of democratic institutions. It is worth noting that both the absolute and relative magnitude of the coefficient on the interaction between terms-of-trade shock and institutions is lower than what was previously found. Overall, these results are in line with those found earlier. The next move is to see if the results hold up when using an alternative measure for institutions. Column 6 reports the results based on the use of political rights index, *IPR*, as the measure of the quality of political institutions.

[69] We run 1 000 iterations in this exercise.

Again, except the terms-of-trade shock, all the other explanatory variables turn to exert statistically significant effects on fiscal stance. Especially, we find the coefficient on the interaction between terms-of-trade shock and political rights index to be statistically significant, backing the argument that political institutions can offset the tendency of government to impart a procyclical bias to fiscal stance as a result of terms-of-trade shocks.

Table 5: Determinants of the cyclicality of Government Expenditure

Dependent variable is the Deviation of Government Expenditure from the period average[a]

	SYS-GMM (5)	(5')	SYS-GMM (6)	(6')
(Lagged GE-Mean GE)	0.7993***	0.8241	0.8351***	0.8610
	(0.1328)		(0.1216)	
TOT Shock[b]	0.3024***	0.1407	0.2430	
	(0.1016)		(0.2264)	
TOT Shock*ICL	-0.1770*	-0.2180		
	(0.0513)			
TOT Shock*IPR			-0.1221*	-0.1587
			(0.0629)	
Number of Observations	160		160	
Number of Countries	25		25	
Chi-Square(Hansen over-id test)	1.00		1.00	
AR(2) (Test for Serial Autocorrelation)	0.211		0.174	
Variables that are instrumented	GE and ICL		GE and IPR	

Note: Robust standard errors are in parenthesis
GE, TOT, ICL and IPR stand for Government Expenditure, Terms of Trade, Civil Liberties Index and Political Rights Index, respectively. Time dummies are included and they turn not to be significant
a. The deviation of government expenditure from the country average is normalised to the period average
b. The deviation of terms trade from its fitted values is normalised to the same fitted values and weighted by the trade shares. The standard errors of the terms-of-trade shock and the interaction between terms-of-trade shock and political institution variables are corrected using a method of bootstrapping.
*** denotes significance of the estimates at 1 percent critical level
* denotes significance of the estimates at 10 percent critical level

We again conduct robustness check by using an alternative measure of fiscal stance, which is based on government current expenditure rather than government total expenditure[70]. Results are reported in table 6. They are very much similar to those found earlier. Except the terms-of-trade shock, all the key variables of interest appear with the theoretically expected signs and are statistically significant at conventional levels. We find, for instance, the coefficient on lagged discretionary fiscal policy measure to be positive and slightly bigger than what was uncovered in previous findings, confirming the presence of a persistence effect of previous discretionary fiscal policy. The coefficients on terms-of-trade shock and on the interaction between terms-of-trade shock and political institutions are robust and exhibit the right signs, implying again that economies that exhibit sound political institutions are prone to conduct countercyclical fiscal policies when facing terms-of-trade shocks.

[70] In addition to current expenditure, we try with current expenditure minus interest payments but the results turn to be roughly identical.

Table 6: Determinants of the cyclicality of Government Current Expenditure

Dependent variable is the Deviation of Government Current Expenditure from the period average[a]

	SYS-GMM (7)	(7')	SYS-GMM (8)	(8')
(Lagged GCE-Mean GCE)	0.8723***	0.9011	0.8313***	0.8587
	(0.0718)		(0.0570)	
TOT Shock	0.2198		0.3484*	0.1674
	(0.2212)		(0.1812)	
TOT Shock*ICL	-0.1240*	-0.1578		
	(0.0606)			
TOT Shock*IPR			-0.1257***	-0.1688
			(0.0322)	
Number of Observations	155		155	
Number of Countries	25		25	
Chi-Square(Hansen over-id test)	1.00		1.00	
AR(2) (Test for Serial Autocorrelation)	0.954		0.333	
Variables that are instrumented	GCE and ICL		GCE and IPR	

Note: Robust standard errors are in parenthesis
GCE, TOT, ICL and IPR stand for Government Current Expenditure, Terms of Trade, Civil Liberties Index and Political Rights Index, respectively. Time dummies are included and they turn not to be significant.
a. The deviation of government current expenditure from the country average is normalized to the period average.
b. The deviation of terms trade from its fitted values is normalised to the same fitted values and weighted by the trade shares. The standard errors of the terms-of-trade shock and the interaction between terms-of-trade shock and political institution variables are corrected using a method of bootstrapping.
*** denotes significance of the estimates at 1 percent critical level
* denotes significance of the estimates at 10 percent critical level

7.3 Transmission channels and other covariates

Having found that democratic institutions are conducive to countercyclical fiscal policies, we now examine the channels through which this correlation operates. Following the proliferate literature on democracy (Keefer, 2004), we identify two sorts of mechanisms at work in any democratic system: the way power is *gained* and the mechanism that constraints the way power is *exerced*. The first refers to what is called "the political competition" while the second is known as "checks and balances".

To gauge the relative importance of these two dimensions in the measurement of the quality of democratic institutions, we regress civil liberties index, *ICL*, and political rights index, *IPR*, on political competition, *POLCOMP*, and checks and balances, *CHEC*, and the results are recorded in columns 9 and 10, respectively. All the coefficients in those regressions are found to be robustly significant. In particular, coefficients on *POLCOMP* and *CHEC* display positive signs and are statistically significant at one percent, supporting the argument that political competition and checks and balances constitute some important aspects of democratic regimes. We also find the coefficients on political competition to be much higher than those on checks and balances, suggesting that a higher consideration is given to political competition in designing the indicators of democratic institutions. In sum, we find the competitiveness of elections and restraints on the executive branch to be two important dimensions of democratic regimes.

Table 7: Democratic Institution indexes and two key characteristics of democratic systems

Dependent variable is the Civil Liberties Index in (9) and Political Rights Index in (10)

	TSEGLS (9)	TSEGLS (10)
Constant	0.8650***	-0.4367***
	(0.0892)	(0.0383)
CHEC	0.0680**	0.1068***
	(0.0295)	(0.0374)
POLCOMP	0.2923***	0.5034***
	(0.0138)	(0.0130)
R-Squared	0.83	0.89
Number of Countries	41	41
Number of Observations	276	276

Note: White heteroskedasticity-consistent standard errors in parentheses
POLCOMP stands for Political Competition while CHEC stands for Checks and Balances
TSEGLS stands for Two-Stage Estimated Generalised Least Squares estimator
*** denotes significance of the estimates at 1 percent critical level
**denotes significance of the estimates at 5 percent critical level

The next step is to examine how these dimensions relate to the ability of African countries to avoid procyclical fiscal policies. We address this concern by replacing democratic institutions indicators with political competition and checks and balances indicators. In addition to exploring the mediating channels through which democratic systems are conducive to countercyclical fiscal policies, we account for additional controls that are widely used in the literature. These controls include political business cycles, trade shares, and the demographic structure of the population. We introduce an electoral dummy to account for the potential effects of political business cycles on the cyclicality of fiscal policy. The rationale behind adding trade shares is to capture the openness of the economy. The assumption is that the more a country is open the less the country is credit constrained. Finally, we include the dependency ratio to capture the impact of demographic structure of the population on fiscal stance.

Table 8: Determinants of the cyclicality of Public Spending, additional covariates considered

Dependent variable is the Deviation of Government total expenditure and Governement Current Expenditure from the period average[a]

	SYS-GMM (11)	(11')	SYS-GMM (12)	(12')
(Lagged GE-Mean GE)	0.6587***	0.5893		
	(0.1633)			
(Lagged GCE-Mean GCE)			0.7980***	0.5587
			(0.2235)	
TOT Shock[b]	0.40070*	0.3576	0.5676*	0.3974
	(0.2156)		(0.2709)	
TOT Shock*CHEC	-0.2038**	-0.4082	-0.2341**	-0.3955
	(0.0857)		(0.1042)	
TOT Shock*POLCOMP	0.0015		0.0038	
	(0.0040)		(0.0034)	
PRES	0.0206		0.0133	
	(0.0332)		(0.0613)	
XM	0.0010		-0.0002	
	(0.0006)		(0.0013)	
DRATIO	-0.0549		-0.0095	
	(0.0525)		(0.1138)	
Number of Observations	117		116	
Number of Countries	19		19	
Chi-Square(Hansen over-id test)	1.00		1.00	
AR(2) (Test for Serial Autocorrelation)	0.425		0.548	
Variables that are instrumented	GE, CHEC and POLCOMP		GCE, CHEC and POLCOMP	

Note: Robust standard errors are in parenthesis
GE, GCE, TOT, CHEC, POLCOMP, PRES, XM, and DRATIOstand for Government Expenditure, Government Current Expenditure, Terms of Trade, Checks and Balances, Political Competition, Presidential Elections Dummy, Imports+Exports to GDP ratio, and the dependency ratio, respectively. Time dummies are included and they turn not to be significant.
a. The deviation of government expenditure from the country average is normalised to the period average.
b. The deviation of terms trade from its H-P-filtered trend is normalised to the same H-P-filtered trend and weighted by the trade shares.
*** denotes significance of the estimates at 1 percent critical level
** denotes significance of the estimates at 5 percent critical level
* denotes significance of the estimates at 10 percent critical level

Results are reported in table 8 in columns (11) and (12). They are largely in line with earlier results. The lagged cyclicality of government total expenditure does enter the two regressions significantly, confirming the earlier finding of the persistency in

cyclicality. Other interesting finding is that the coefficient on terms-of-trade shock is statistically significant at conventional levels and turns with the right sign (positive sign). As mentioned before this result suggests that a positive (negative) exogenous shock, irrespective of the quality of political institutions, gives rise to expansionary (contractionary) fiscal stance.

Moving to the two features of democratic systems, we find the interaction between terms-of-trade shock and checks and balances indicator, *TOT Shock*CHEC*, to have a statistically significant negative impact on the cyclicality of public spending, suggesting that constraints on the executive branch have the potential to make fiscal policy countercyclical in the presence of exogenous shocks. On the other hand, the coefficient on the interaction between terms-of-trade shock and political competition indicator, *TOT Shock*POLCOMP*, is not statistically significant. This result might indicate that political competition alone does not set conditions for fiscal policies to be countercyclical. These results therefore lend strong support to the argument that democratic institutions are prone to conduct countercyclical not because of the electoral competition they brought about but because of the effective restraints they put on rulers.

Turning to other controls, we find all to be statistically insignificant. Political business cycle, the degree of openness, and the demographic structure of the population do not impact directly the cyclicality of fiscal policy. The non-significance of the coefficient on the electoral dummy may indicate that political business cycles may be neutralised in the presence of effective constraints of the executive. Assuming that the trade shares capture the degree of openness, the lack of significance of the coefficient on trade shares may illustrate the imperfection of the international capital markets

(Kaminsky et al., 2004). In other terms, even open economies can not borrow during bad times to smooth public spending.

Overall, the main argument holds up even when one includes additional controls. Democratic institutions facilitate the adoption of countercyclical fiscal policies mainly because of the effective constraints these institutions place on the executive.

VIII-CONCLUSION

The vast majority of African countries went through bold political transformations in the earlier 1990s, especially moving from one-party rule to increased political pluralism. The period that predates the democratisation era was characterised by a broad wave of authoritarian rule, procyclical economic policies, including fiscal and monetary, and poor economic growth. These three events have been proven to be closely related. For that reason, a move towards greater democracy in many African countries legitimately raises hopes among many analysts for an improved economic management and stronger and sustained economic growth. The goal of this chapter was therefore to test whether democratic reforms in the context of African countries have the potential to make fiscal policy more countercyclical. If this is the case, what are the channels through which this correlation operates?

The empirical analysis is based on panel data of 47 African countries over the 1989-2002 period, and the estimation technique used is the system Generalised Method-of-Moments Estimator System (SYS-GMM). We found measures of government spending cyclicality to be negatively and strongly correlated with the interaction between

democratic institution indicators (political rights index and civil liberties index) and terms-of-trade shock. This result is consistent with the prediction of our model, which is that sound democratic institutions are conducive to countercyclical policies. Moving to the channels through which fiscal policy matters for fiscal policy, we focused on two critical aspects of democratic institutions, which are electoral competition and checks and balances. These two dimensions of democratic systems are found to be strongly related to the two measures of democratic institutions (political rights index and civil liberties index). Among the two dimensions of a democratic system, electoral competition, however, seems to have the highest weight in the construction of indicators of democratic institutions.

Even though more weight is given to political competition in the compilation of democratic institutions indexes, we found this dimension of democracy to be uncorrelated to fiscal policy stance. On the contrary, we found formal institutions that impose restraints on the executive branch to be the key factor that explain why democracies can smooth business cycles better than autocracies.

APPENDIX III-1: DEFINITION OF VARIABLES AND SOURCES

VARIABLES	*SOURCES*
Dependant	
GE	Total Government Expenditure (in constant prices, deflated by the Implicit Deflator of GDP) Source: World Development Indicators 2004
GCE	Government Current Expenditure (in constant prices, deflated by the Implicit Deflator of GDP) Source: World Development Indicators 2004
Explanatory	
TOT	Net barter terms of trade, which is the ratio of the export price index to the corresponding import price index Source: World Development Indicators 2004
ICL	Civil Liberties Index (CL) was transformed into an increasing function (ICL) by adding 7 to the product of -1 times CL Source: Freedom House, 2005
IPR	Political Rights Index (PR) was transformed into an increasing function (IPR) by by adding 7 to the product of -1 times PR Source: Freedom House, 2005
CHEC	Checks and balances capture the number of veto players present in a political system. Source: Database of Political Institutions
POLCOMP	The competitiveness of executive recruitment. Source: Polity 5
DRATIO	Age dependency ratio is the ratio of dependents, people younger than 15 and older than 64, to the working, age population, those ages 15-64 Source: World Development Indicators 2004
XM	Exports of goods and services plus imports of goods and services Source: World Development Indicators 2004
PRES	Dummy variable that is equal to 1 if the is a presidential election and 0 otherwise Source: CIA-World Factbook and Wikipedia, the free encyclopedia

APPENDIX III-2: SAMPLES

SUB-SAHARAN AFRICA

Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Republic of Congo, Cote-d'Ivoire, Eritrea, Ethiopia, Equatorial Guinea, Gabon, the Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Nigeria, Niger, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

GENERAL CONCLUSION

GENERAL CONCLUSION

Despite the recent growth resumption in Sub-Saharan Africa, the region continues to harbour the majority of the world's poorest nations. Per-capita income is still below the level achieved before the 1973 oil shock. The distribution of incomes and assets is largely skewed, and Africa is considered the second highest unequal region in the world (United Nations, 2006). The poor growth record and high inequality conspire to increase poverty. Africa is home to a growing share of the world's absolute poor.

However, there are some positive developments. There is an increasing number of countries that have made headway in pursuing economic and political reforms, which both are believed to be conducive to strong economic growth. Most of the economic reforms that have been implemented are rooted in the dependent economy model. Real exchange rate and absorption, captured by public spending, are therefore the two variables targeted by policy-makers. Chapter I revisits the policy argument along the lines of the arguments developed by Guillaumont et al. (1999) and looks into the role played by policy instabilities in the poor growth performance of African countries. However, the approach adopted in Chapter I differs from earlier work in two perspectives. First, it relies entirely on the key variables underscored in the dependent economy model, namely the real exchange rate and public spending. Second, the analysis is based on dynamic panel data instead of the commonly use of cross-country data. The empirical investigation shows that only real exchange instability has a direct significant influence on economic growth. The combination of a statistical significance of real

exchange instability and the non-significance of public spending instability, when incorporated in the same regression, indicates that both are not two distinct factors regarding their impact on per capita growth. Public spending instability has a significant positive predictive power over real exchange rate instability, which in turn hampers growth both through investment and productivity channels. Also, real exchange rate instability has asymmetric effects on economic growth as the relationship between these two variables is driven by real exchange rate appreciation. Finally, partial evidence supports the view that real exchange rate appreciation contributes to the decline of sectors with important positive externalities, thereby leading to persistent productivity losses and weak economic growth. Overall, we interpret these findings as suggesting that the stability of public spending and real exchange rate are keys to Africa's long-term economic growth. Reducing large fluctuations in public spending requires gaining some control over both internal and external sources of government revenues. In many African countries, with a narrow production basis, domestic revenues are closely linked to developments in commodity markets. The long-term solution for government revenue and expenditure instability is to broaden the revenue base through economic diversification. However, achieving stability of government domestic revenues in the short-run may be facilitated by the adoption of contingent financial instruments and some institutional arrangements, such as the establishment of a stabilisation fund. The use of contingent financial instruments, such as futures, swaps, and options, has the potential to transfer commodity price instability to international markets and guarantee more stable public revenue and expenditure. However, the shortcoming of this scheme is that it requires a sophisticated domestic financial sector, or at least capacity in trading

commodity-backed financial instruments. Such institutional structures do not yet exist in many African countries. Contrary to the contingent financial tools, stabilisation seems to be a feasible solution. The stabilisation fund serves as a buffer mechanism whereby part of windfall revenues are transferred from the budget to the stabilisation fund during times of increasing commodity prices and the other way around when prices are declining, ensuring therefore a stability of public spending. The other source of uncertainty for government revenue is the flow of resources from abroad that finance government deficit. Most African countries rely on aid flows in that respect, which means a more predictable aid could also be beneficial. Having more stable public spending could take care of an important source of real exchange rate instability.

The dependent economy model also serves as the main theoretical framework to investigate the controversial nexus between economic policies and poverty in chapter II. The approach used in that chapter consists in assessing the impact of economic policies on poverty through real exchange rate and public spending, with more emphasis on real exchange rate. The main argument put forward in the theoretical framework is that the depreciation of real exchange rate is conducive to poverty reduction provided that there are good institutions and a fairly equal income distribution.

The empirical investigation strongly supports the view that high inequality, proxied by income Gini coefficient, impedes the potential positive effect of real exchange rate depreciation on the poor incomes. It also largely backs the contention that the potential positive impact of real exchange rate depreciation on the poor is much stronger

when institutions are sound. In addition, it appears that there is no asymmetric effect of real exchange rate on the incomes of the poor. These findings hold when adding additional covariates. Additional controls are added to the analysis to account for other factors that might have been missed. Among these variables, education appears to be critical for poverty reduction. On the other hand, trade openness, agricultural productivity, and public spending are found not to be statistically associated with the incomes of the poor. The lack of significant coefficients associated with these variables does not mean a complete absence of relationships between these indicators and poverty but rather indicates that trade openness, agricultural productivity, and public spending come into play indirectly because of their potential impact on economic growth. The main lesson that can be drawn from these findings is that policies favouring the depreciation of real exchange rate could be a powerful tool for poverty reduction, provided they are complemented by reforms that facilitate the access of the poor to production factors and improve the quality of institutions.

The quality of institutions, notably political institutions, is at the core of the issues raised in Chapter III. The vast majority of African countries went through bold political transformations in the early 1990s, especially moving from one-party rule to increased political pluralism. This development raised hopes because the period that predates this wave of democratisation was characterised by authoritarian rule, procyclical economic policies, including fiscal and monetary, and poor economic growth, which all three have been proven to be closely related. Chapter III attempts to test whether democratic reforms, in the context of African countries, have the potential to make fiscal policy more

countercyclical. In addition, it tries to uncover the channels, through which this correlation operates, if there is any association between democratic changes and countercyclical policy.

Assuming that terms-of-trade shock captures the deviation of output from its long-term level, the empirical analysis suggests that the cyclicality of government spending is negatively and strongly associated with the interaction between democratic institution indicators (political rights index and civil liberties index) and terms-of-trade shock. This result is consistent with the main argument developed in the chapter, namely that sound democratic institutions are conducive to countercyclical policies. As far as the transmission channels are concerned, we focused on two critical dimensions of democratic institutions, which include electoral competition and the checks and balances. These two dimensions of democratic systems are found to be strongly related to the two measures of democratic institutions (political rights index and civil liberties index). Among the two dimensions of a democratic system, electoral competition, however, has implicitly the highest weight in the construction of indicators of democratic institutions. Even though more weight is given to political competition in the compilation of democratic institutions indexes, we find this dimension of democracy not be condusive to countercyclical fiscal policies. On the contrary, we find formal institutions that impose restraints on the executive branch to be the key factor explaining why democracies can smooth business cycles better than autocracies. The policy implication is that the recent wave of democratisation constitutes a positive development because it provides countries with the opportunity to avoid procyclical policy. Competitive elections are important.

But, taken alone, they do not guarantee changes in the cyclical properties of fiscal policy. Promoting and accelerating the introduction of domestic effective restraints on the executive branch, which prove to be more sustainable than foreign-led constraints, would probably increase the likelihood of adopting countercyclical fiscal policies.

Overall, the conclusive findings of the empirical investigation conducted in all the three chapters should not obscure the importance of dealing effectively with variable definition problems. All the empirical results in Chapter I are based on a definition of poverty that relies on the fifth poorest quintile. Future research would gain from considering alternative measures of poverty as there has been significant progress in collecting household surveys in recent years. Also in the same chapter, we revert to political institution variables as proxies for institutions because we could not get time-varying indicators of institutions such as those generated by ICRG[71]. Again, addressing such a shortcoming would be of great interest. The same also holds true for the indicator for inequality since we use income Gini coefficient instead of an indicator that captures the distribution of assets.

In addition to variable definition problems, some substantive questions require further exploration. Chapter II finds a strong evidence for a positive relationship between real exchange rate and public spending stability and growth. The experience of African countries suggests that stable real exchange rate and public spending are exceptions

[71] International Country Risk Guide index is based on underlying numerical evaluations with respect to the expropriation risk, corruption, the rule of law, and government repudiation of contracts.

rather than the rules. Then, the question of what motives push governments to pursue such policies may require further investigation. Finally, Chapter III substantiates the view that a move toward democratic systems is favourable to countercyclical fiscal policy, especially if checks and balances are in place. This analysis is arguably general because it does not account for the variety of electoral rules and forms of governments. In other words, the view might be seen as falling under the trap of "One size fits all". Perhaps one of the greatest payoffs for future research on the relationship between the cyclical properties of fiscal policies and democracy is likely to be obtained by considering the wide range of political systems across democracies.

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Résumé

Cette thèse est un recueil de trois essais, chacun correspondant à un chapitre. Le premier chapitre procède à l'analyse des causes de la faible croissance de l'Afrique en s'appuyant sur l'argument dit « des politiques ». C'est ainsi qu'il convoque la littérature mettant l'accent sur le rôle de l'instabilité des politiques et utilise le modèle de l'économie dépendante comme fondement théorique. Le chapitre explore les effets potentiels de l'instabilité des dépenses publiques et du taux de change réel sur la dynamique de croissance ainsi que les canaux de transmission à travers lesquels ces effets prennent corps. Les résultats de l'analyse empirique révèlent que l'instabilité des dépenses publiques exacerbe l'instabilité du taux de change réel, qui, en retour, exerce un effet négatif tant sur l'investissement que sur la productivité globale des facteurs. Par ailleurs, l'analyse empirique indique, en partie, que l'appréciation du taux de change réel contribue au déclin des secteurs à forte externalités positives, contribuant ainsi à des pertes continues de productivité et à une croissance économique atone. Ces résultats impliquent que la stabilité des dépenses publiques et du taux de change réel est cruciale pour la croissance économique à long-terme du continent.

Le second chapitre s'intéresse à la problématique politiques économiques et pauvreté et s'appuie, également, sur le modèle de l'économie dépendante. Le chapitre part des dépenses publiques et, dans une large mesure, du taux de change réel et explore les liens entre ces deux variables et la pauvreté. L'analyse empirique, reposant sur un échantillon de pays africains et non-africains, montre que la dépréciation du taux de change réel favorise les pauvres, à condition que les inégalités de revenus ne soient pas criardes et que les institutions fonctionnent adéquatement. Il découle de ces résultats empiriques que la dépréciation du taux de change réel peut être un puissant outil au service de la réduction de la pauvreté si elle est complémentée par d'autres politiques. Ces politiques comprennent entre autres : faciliter l'accès des pauvres aux facteurs de production et améliorer la qualité des institutions.

S'inscrivant dans la droite ligne de la littérature liant les choix de politiques aux régimes politiques, le troisième et dernier chapitre porte un regard sur les implications du processus de démocratisation enclenché en Afrique sur les propriétés cycliques de la politique budgétaire. La principale question à laquelle essaie de répondre ce chapitre est de savoir si les institutions démocratiques ont facilité l'adoption de politiques budgétaires contra-cycliques sur le continent. L'analyse empirique y répond en montrant une corrélation positive entre institutions démocratiques et politiques budgétaires contra-cycliques. De plus, et ce point est sans doute le plus important, les institutions formelles ayant pour vocation de contrebalancer le poids de l'exécutif s'avèrent être le principal facteur qui explique pourquoi les démocraties lissent mieux les cycles économiques que les autocraties.

Numéros de Classification JEL : C23, E32, E6, I3, F41, O4, O55, P16

Mots Clés: Modèles avec des données de panels, Fluctuations/Cycles Economiques, Formulation de Politique Macroéconomique, Pauvreté, Macroéconomie en Economie Ouverte, Croissance Economique, Afrique, Economie Politique.

Executive Summary

This thesis is a collection of three essays, each corresponding to a chapter. The first chapter investigates the causes of Africa's poor growth performance along the line of the policy argument. It therefore focuses on the strand of literature that highlights the role of policy instability and uses the dependent economy model as the main theoretical framework. It explores the potential effects of real exchange rate and public spending instabilities on growth dynamics as well as the transmission channels through which these effects unfold. Results from the empirical analysis indicate that public spending instability increases real exchange rate instability, which in turn exerts a negative impact on both investment and total factor productivity. In addition, the empirical investigation suggests partially that real exchange rate appreciation contributes to the decline of sectors with important positive externalities, thereby leading to persistent productivity losses and weak economic growth. These results can be interpreted as indicating that the stability of public spending and real exchange rate are keys to the region's long-term economic growth.

The second chapter explores the relationships between economies policies and poverty, using again the dependent economy model as the main theoretical construct. Accordingly, it focuses on public spending and real exchange rate, with more emphasis on real exchange rate, and explores the links between these two variables and poverty. The empirical analysis, which is based on a sample of African and non-African countries, shows that real exchange rate depreciation favours the poor, provided that income is fairly distributed and institutions are sound. The main policy implication of this finding is that real exchange rate depreciation could be a powerful tool for poverty reduction if complemented by other policies. Such policies include facilitating the access of the poor to production factors and improving the quality of institutions.

In line with the literature that links policy choices to political regimes, the third and last chapter looks into the implications of the democratisation process in Africa on the cyclical properties of fiscal policy in the continent. In particular, the main question that is investigated is whether democratic institutions have been conducive to more countercyclical fiscal policies in the region. The empirical investigation uncovers a positive association between democratic institutions and countercyclical fiscal policies. More importantly, formal institutions that impose restraints on the executive branch are found to be the key factor that explains why democracies can smooth business cycles better than autocracies.

JEL Classification Numbers: C23, E32, E6, I3, F41, O4, O55, P16

Keywords: Models with Panel Data, Business Fluctuations/Cycles, Macroeconomic Policy Formation, Poverty, Open Economy Macroeconomics, Economic Growth, Africa, Political Economy.